

Suid-Afrikaanse Tydskrif vir Geneeskunde South African Medical Journal

Posbus 643, Kaapstad

P.O. Box 643, Cape Town

Kaapstad, 5 April 1958
Weekliks 2s. 6d.

Vol. 32 No. 14

Cape Town, 5 April 1958
Weekly 2s. 6d.

JUVENILE DELINQUENCY AND PROBLEM CHILDREN: SOME COMMENTS*

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In the world today no social problem is causing graver concern than the anti-social acts committed by children from the ages of 6 to 18 who constitute our juvenile delinquents and problem children.¹

Juvenile delinquency is a 'deficiency' disease but not of the familiar A, B, C variety. It is not a deficiency of the soma or body but of the psyche. These children suffer acutely from 'moral and spiritual avitaminosis.'

Juvenile delinquency is primarily parental delinquency. A problem parent often breeds a problem child, and most parents of problem children are unhappily married. Wretched home conditions, bad environment and poverty are the commonest causal factors. It is not so much the broken home as the disorganized home that is at fault. The broken home may be brought about by divorce or the loss of a parent or both parents. It is not so much the physical absence of one or both parents as faulty human relationship which causes the numerous inimical anti-social acts committed by juveniles. In the disorganized home we find one or more of the following factors having a trigger action: criminal parents, mental instability in one or both parents, over-severity, neglect, jealousy, favouritism, domination, or parental maladjustment due to race or religion.

The delinquent suffers from an inferiority complex which is manifested in bullying, shouting, lying, vandalism, sadism, vagrancy and bizarre sexual offences. A particularly common form is truancy from school, which has been labelled the 'kindergarten of crime.'

The juvenile delinquent and problem child appears on the surface as a cold, callous and predatory person. He seems to be devoid of remorse or a sense of guilt when faced with his misdeeds. This is only a mask. He is 'putting on an act', for basically he is jittery, anxious, uncertain and insecure. The problem child has a constant struggle between repression and expression. There is far too much repression but little chance for expression, which must find an outlet. Alcoholics, drug addicts, sex perverts and criminals can often trace to early childhood their subjection to severe emotional stress and strain.

The unloved child, denied an outlet for healthy self-expression, develops a masochistic attitude. Frustration forces aggression, and a series of tensions resulting from neglect and operating over a long period commonly precipitate conduct disorders. And not only the grossly neglected and unloved child is a possible candidate for delinquency, but also the over-indulged one. Parental overindulgence creates an artificial environmental protection which stunts normal growth and development. Such a child lacks stability. Youngsters are attracted to gang groups because their own homes lack warmth and attraction. These gang groups are the breeding grounds for gangsters and gangsterettes.

Strange as it may seem, the problem child is always struggling to *solve* a problem rather than to *be* one. His methods, alas, are crude, his conception of his problem is faulty, and his technique fails to conform with the recognized conventional standards of the community. His fantastic anti-social conduct is the result of his grave emotional imbalance.

What effect does divorce or remarriage have on a child like this? The grim fact must be faced that the most glamorous woman can never replace the real mother, and no man can fill the vacant chair of the father.

A golden rule was laid down by John Locke, a physician and philosopher who lived some 250 years ago: 'Caress and commend children when they do well. Show a cold and neglectful countenance to them upon doing ill.' Today we have the warning words of Leo Kanner, of New York: 'Avoid parental despotism on the one hand and parental submission on the other.' With better, more informed and responsible parents we will have a reduction of the problem of delinquency and crime.

The chief desideratum of a growing child is a peaceful home—'peace that passeth understanding.' Love and affection are the essential 'vitamins' for a child's physical and spiritual growth and development. A stable and secure family in a happy home is the pre-eminent requisite for the prevention of delinquency. Every normal child wants to feel that his parents love and adore him, and that he has the best parents in the world. It is chagrin for a child to find that his parents are

* Presented at the South African Medical Congress, Durban, September 1957.

corrupt and social outcasts. Such dreadful discovery deflates his ego and is soul-destroying.

Sex delinquency is often traceable to parental incompetence in dealing with the question. Proper enlightenment is the best prophylactic against early sexual maladjustment. Adequate sex education requires a full measure of frankness, tact, and sound common sense. Many parents look shocked or grin or mumble something incoherent when questioned innocently by their child on sex matters. They pretend to be horrified at a natural and correct question on a vital matter which is perfectly physiological and essential for the average normal child to understand. Such parents goad their enquiring intelligent child to obtain information from most harmful channels, where sex is presented in a distorted, melodramatic and obscene form—with grave results.

Prognosis. What does the future hold for the delinquent and problem child? A natural orthotendency tends to produce adjustment. Despite the fact that thousands of boys and girls get into trouble every year, most of them grow into good citizens, but some continue their delinquent careers and are the professional criminals of tomorrow. It is truly amazing how many problem children become fairly well adjusted in later life. Indeed most delinquent children can be reclaimed. This demands continuity of treatment of each child as an individual.

Treatment

How should one treat these deviated children? It is a difficult task because it is complex. There are many facets in the child's make-up, and each facet must be scrutinized. Team-work is essential. The personnel should consist of the general practitioner, the school teacher, pastor, the scout master, the nurse, and the social worker. Such a team will approach the problem child with tact, understanding, and a knowledge of child psychology.

In order to correct character deviations in children we must penetrate the basic layers of character growth and

development. If that can be done our next task is to resurrect the natural qualities of anxiety and guilt which were buried at an early age. Find the causal factors and, if possible, eradicate them. It is painful to face the grim fact that despite all our efforts we are often driven to remove a child from a disastrous domestic environment. These unfortunate deviated children need sympathy and understanding, and to provide that we must go down to their level and avoid undue criticism and moralizing. The child must be treated as a whole; he is a unit in himself as well as a unit in his home and in society.

Ira S. Wile,² a leading American authority on behaviourism, advises us, when treating a problem child, to think of a cart wheel. Consider the child as the hub; his home, school-mates and companions are the spokes, and his economic, social and creative opportunities as the circumference of the therapeutic wheel. The careful and cautious turning of the wheel will guide the development of a sound character, a healthy mind in a healthy body, from childhood into adolescence.

The child must be examined physically to determine that organically he is sound. Any physical defects must be corrected and his level of intelligence measured. Readjustments in the home and school will awaken interests and responsibilities which will guide the child into paths of correct social conduct depending on his capabilities.

Prevention. Medicine in the future will concern itself mainly with prophylaxis. Social service will focus its attention sharply upon undesirable environmental conditions which adversely affect the health and welfare of the community. For the prevention of juvenile delinquency a well organized happy home is the great objective. When that is achieved, the problem child will become a rarity.

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TRAUMATIC INTUSSUSCEPTION

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Records show that there were 20 emergency cases treated at this hospital on 31 December 1957. The first, and most interesting was a stab wound.

CASE REPORT

A 26-year-old Native male had been stabbed at a party at about 1 a.m. on New Year's Eve, and was brought to this hospital by ambulance. He was seen by one of us (L.H.); he was presented with a vertical stab wound in the left flank, 1 inch long and 1 inch below the costal margin, through which prolapsed a wedge of omentum. His pulse rate was 66 per minute, his blood pressure was 140/90 mm. Hg, and his abdominal wall was soft. There was no suggestion of free fluid in the abdominal cavity.

He was admitted to the non-European male ward, given anti-tetanic serum, 1 million units of penicillin and 1 g. of streptomycin, and was prepared for operation.

Operation (J.R.). A left paramedian incision revealed no

perforation of any viscus. The unusual finding was an intussusception 3 inches long at about the mid-point of the small bowel directly opposite the stab wound. This was reduced without difficulty, and careful palpation disclosed no polyp or other abnormality to account for it. The exposed omentum was excised, the incision closed, and a drain inserted through the stab wound.

Antibiotics being continued, the patient was kept on intravenous fluids for the first day, and on the second day he was given fluid by mouth. He made an uneventful recovery.

After the man had recovered from the effects of the party he said he had been in the best of health before he attended it.

Thanks are due to Mr. R. D. H. Baigrie, the Surgeon in charge of the case, and Dr. K. Field, Superintendent, Victoria Hospital, Wynberg, for permission to publish details of this case.

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VAN DIE REDAKSIE

IMMUUNLIGGAAMPES BY KANKER

Daar heers geruime tyd al die mening dat 'n spesifieke antigeniese toets vir kanker van groot hulp met vroeë diagnose kan wees, en dit moontlik mag maak om met die behandeling te begin terwyl die kans op sukses groter is. Die toets kan ook gebruik word om vas te stel hoe geslaagd die behandeling is en om aan te dui of verdere chirurgiese of geneeskundige behandeling nodig is. Die verskil tussen kankerselle en normale weefsel is gering, en so ook is die verskil in hul metabolisme gering. Die toets moet fyn genoeg ingestel wees om hierdie verskil op te neem, en om van diagnostiese waarde te wees, moet sy spesifiteit aan taamlik streng eise voldoen. Dunn en Greenhouse (1950)¹ het die maatstawwe as volg bepaal, t.w., '90% akkuraat by gevalle van kanker en ten minste 95% akkuraat by pasiënte wat nie kanker het nie.¹

Mann en Welker (1943)² het bevind dat 'n karsinoom in enige deel van die liggaam sekere stowwe in die bloedsomloop uitstort waarteen teenliggaampies gevorm word. Hulle het tot die gevolgtrekking gekom dat hierdie stowwe deel uitmaak van die molekule van die kankerweefsel en dat hierdie fraksies nie by normale mense voorkom nie. Die vroeë bevindings van Makari en Huck (1955)³ (hulle het die Schultz-Dale-badtegniek gebruik—een van die fynste metodes om teenliggaampies op te spoor) is onlangs deur Burrows⁴ bevestig en verder gevoer. Volgens hierdie metode word die baarmoeder van 'n geïmmuniseerde marmotjie in 'n soutoplossing gehang, die serum wat getoets moet word, word by dié soutoplossing gevoeg nadat die baarmoeder ongevoelig gemaak is vir normale serum (d.w.s. nie-kankeragtige serum) deurdat dit vooraf blootgestel is aan en deurweek is met normale serum. Sametrekking van die geïmmuniseerde baarmoeder dui 'n positiewe reaksie aan.

'n Opvallende aspek van Burrows se bevindings is dat sulke uiteenlopende gewasse soos epiteliom van die lip, seminom van die testis, karsinom van die bors en kwaadaardige melanom almal dieselfde teenliggaampie voortbring. Hierdie feit suggereer 'n holistiese opvatting van karsinom in die algemeen—veral in die lig van Burrows se ontdekking dat sarkome en leukemies nie 'n ooreenstemmende antigeniese beeld toon nie—en dit raak aan die werklike kern van die oorsprong van neoplasie. 'n Kwantitatiewe berekening van die hoeveelheid teenstof wat gevorm is, bewys dat daar geen verband tussen die grootte van die gewas en die hoeveelheid teenstof bestaan nie as die gewas eers die kritieke omvang van 1 cm. deursnee bereik het. Die toets self is akkuraat genoeg: 'Uit die 301 karsinom-pasiënte wat getoets is, was 291 positief; 'n korrekte opgawe

EDITORIAL

IMMUNE BODIES IN CANCER

It has long been felt that a specific antigenic test for cancer would be of great assistance in early diagnosis and might enable treatment to be instituted while it had a better chance of being effective. The test might also be used to estimate the success attained in treatment and to indicate whether further treatment, surgical or medical was necessary. As the difference between cancerous cells and normal tissue is narrow, so the difference in their metabolism is small. To this difference the test would need to be sensitive, and to be of use in diagnosis the specificity of the test would need to satisfy somewhat rigid criteria. Dunn and Greenhouse (1950)¹ laid down such criteria, viz., '90% accurate in cases of cancer and at least 95% accurate in non-cancerous patients'.

Mann and Welker (1943)² found that carcinoma in any part of the body releases into the blood stream certain substances against which antibodies develop. They concluded that these substances are part of the molecule of the carcinomatous tissue and that these fractions are not present in normal individuals. Earlier findings concerning cancer antibodies obtained by Makari and Huck (1955),³ utilizing the Schultz-Dale bath technique, which is one of the most sensitive methods of detecting antibodies, have recently been confirmed and elaborated by Burrows.⁴ In this method the uterus of an immunized guinea-pig is suspended in a bath of saline, to which the serum to be tested is added after the uterus has been desensitized to normal (i.e. non-carcinomatous) serum by previous exposure to and saturation by normal serum. A positive result is indicated by a contraction of the immunized uterus.

A striking feature of Burrows' findings is that such diverse tumours as epithelioma of the lip, seminoma of the testis, carcinoma of the breast and malignant melanoma all produce the same antibodies. This suggests a holistic view of carcinoma in general—particularly as Burrows finds that sarcomata and leukaemias do not show the same antigenic picture—and touches upon the very essence of the genesis of neoplasia. A quantitative estimation of the amount of antibody developed shows that there is no relation between the size of the tumour and the amount of antibody once the critical size of 1 cm. in diameter has been attained by

van 96.7%.* En uit die 207 karsinoomvrye pasiënte wat die toets ondergaan het, was 200 negatief, d.w.s. die toets was korrek by 96.6%. Slegs by 10 gevalle is die antigeen-toets toegepas ná sowel as vóór die karsinoom verwyder is. Oor die algemeen blyk dit dat dit verskeie maande duur voordat die antigeen verdwyn. Dit is duidelik dat verdere navorsing in hierdie verband nodig is.

As finale *tour de force* het Burrows en Neill (1958)⁵ voortgegaan om die aktiewe bestanddeel van die immuunliggaampie, wat by kankerpatiënte teenwoordig is, uit te ken. Hierdie navorsing is by wyse van elektroforetiese metodes uitgevoer en die uitslae toon dat dit 'n polipeptiede is, spesifiek 'n muco-polipeptied. Dit is bewys dat hierdie polipeptied verwant is aan, of dieselfde is, as die polipeptied wat by nefrose voorkom.

Hierdie verslae gryp die verbeelding aan. Is die aanleg wat verantwoordelik is vir die oorsprong en groei van karsinoom basies immunologies? As daar 'n gemeenskaplike antigeen, en 'n ooreenstemmende immuunliggaampie by die verskillende soorte karsinoom voorkom, hoe kan hierdie ontdekking op die voorkoming of die behandeling toegepas word? Kan die liggaam gehelp word om die teenstof teen karsinoom te ontwikkel? Hoewel dit gerade is om ons bespiegeling in toom te hou, kan ons die uitslae van verdere navorsing op die gebied, wat deur hierdie ontdekkings oopgestel is, met afgemete optimisme afwag. Ons kan hoop dat die donker sluier van onwetenskap binnekort verder oopgetrek sal word, en dat ons op die drumpel van groot gebeurtenisse in die kliniek staan.

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3. Makari, J. G. en Huck, M. G. (1955): *Brit. Med. J.*, 2, 1291.
4. Burrows, D. (1958): *Ibid.*, 1, 368.
5. Burrows, D. en Neill, D. W. (1958): *Ibid.*, 1, 370.

the tumour. The test itself is accurate enough: 'Of the 301 patients with carcinoma tested, 291 were positive, an accuracy of 96.7%. And 'of the 207 without carcinoma tested, 200 were negative, an accuracy of 96.6%'. In only 10 cases has the test been performed after removal of the carcinoma as well as before. In general, it appears to take several months for the antigen to disappear. Further study in this direction is clearly necessary.

As a final *tour de force* Burrows and Neill (1958)⁵ next proceeded to identify the active constituent of the immune body present in carcinomatous patients. This work was done by electrophoretic methods and the results indicate that the substance is a polypeptide, specifically a muco-polypeptide. This polypeptide has been shown to be allied to or identical with the polypeptide found in nephrosis.

These reports are exciting to the imagination. Is the diathesis which is responsible for the origin and growth of carcinoma fundamentally immunological? If there is a common antigen in the various forms of carcinoma, and a corresponding immune body, in what way can this discovery be used in prevention or therapy? Can the body be assisted to develop the antibody against carcinoma? Although it is well to pause in our speculation, we may with measured optimism await the results of further research along the way opened up by these discoveries. We may hope that this breach in the dark walls of ignorance will soon be further widened, and that we may be on the threshold of great events in the clinical field.

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5. Burrows, D. and Neill, D. W. (1958): *Ibid.*, 1, 370.

NOTES ON THE CARE OF LEADWORKERS*

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The rapidly developing industrialization of the Union of South Africa not only brings with it increased risks to life and limb by machinery, but it is also accompanied by the appearance of diseases peculiar to industry. Some of these diseases are new to the industrial scene; others have a long, if not an honourable, history behind them.

For the greater part, it is into this latter category that poisoning by lead and its inorganic compounds falls. Legge and Goadby (1912) in their historical survey of the use of lead refer to the description by Pliny of lead colic and mention that Hippocrates was apparently familiar with the condition among lead smelters. Throughout history writers have connected the well-known toxic symptoms of colic and palsy with the ingestion of lead.

Owing to its valuable properties of malleability and relatively high resistance to corrosion, in addition to the innumerable and varied applications of its compounds, lead has found a widespread usage in industry. Its consumption in this country

is rising rapidly, many recently established industrial processes requiring large amounts of the metal or its compounds. Thus it can be expected that with every year more workers will be exposed to the dangers of lead poisoning.

Occupational Environment. A knowledge of the occupational environment is considered a prerequisite in the supervision of the health of industrial workers. The doctor who is familiar with the working conditions of his patients is at a great advantage in diagnosing and treating their ailments. The care of workers subject to a toxic hazard calls for a two-pronged approach—one, the investigation and control of the working environment; the other, the periodic examination of the individual workers for evidence of adverse effects. The results of the latter, in turn, serve as pointers to hazardous operations or areas.

Plant Inspection. It is important, therefore, that the doctor should from time to time study the working environment of his patients. On these occasions he should be accompanied by a representative of management. It has been stressed by many workers in this field that without the cooperation of

* A paper presented at the South African Medical Congress, Durban, September 1957.

management it is impossible to accomplish any real work in the prevention of lead poisoning. The most suitable persons to be delegated the duty of accompanying the doctor are the production superintendent, the plant engineer, the chemist, the safety engineer and the personnel officer. During the factory tour the doctor should pay attention to the type of operation and nature of material used, the details of engineering control of potential hazards, (e.g. general and local ventilation), personal protective equipment, house-keeping methods and ablution and eating facilities. The hours of work and, therefore, of exposure should also be taken into account. What would be satisfactory conditions for a normal day's work may constitute a hazard if consistent overtime is worked. Whilst the risks of many operations are obvious, others may reveal themselves only after careful enquiry. For instance, it may only be direct questioning that will elicit the fact that the brass being cast in a foundry has lead as a constituent.

Industries using Lead

As has been indicated, lead is used in industry on a large scale, and the operations involved are so numerous and varied that it would be quite impossible to list them all. Although in many cases the dangers are well known and adequate precautions are taken, there are other instances where the exposure is not recognized. Hence poisoning occurs but is neither suspected by the workman nor diagnosed by his doctor. Often, too, whilst the actual leadworker is known and cared for as such, cleaners and maintenance men, or persons engaged on salvaging material, possibly much more heavily exposed, have no thought given to the hazards of their jobs.

In the United Kingdom the main sources of lead poisoning in 1941 were given as follows: (Home Office Memorandum on Industrial Lead Poisoning, 1941)

'Smelting of Metals. Lead Smelting and Desilverizing. Fume and dust at the blasting and refining furnaces, and fume given off by the cupola.

'Plumbing and Soldering. Dust created in handling red and white lead for jointing, and fume evolved from lead burning with a high temperature blowpipe flame.

'Ship-Breaking. Fume given off from the lead-painted plates when cut out by the high-temperature blowpipe flame, and dust and fume from the chipping and burning off of lead paint.

'Printing. Dust from the type cases and from the "dross" (lead suboxide) skimmed from the molten metal.

'Other Contact with Molten Lead. Dust arising from manipulation of the dross which forms on the surface of the molten metal and which must be frequently removed, and fume from spraying of molten lead by means of compressed air on metal surfaces.

'White and Red Lead Works. Manufacture of Red Lead. Dust from the furnaces and in packing.

'Pottery. Dust in the processes of dipping, aerographing, etc., where lead glazes are used.

'Vitreous Enamelling. Dust from the glaze.

'Electric Accumulator Works. Dust of the dross from the molten metal in casting grids; of lead oxide in mixing, pasting, trimming, filing, etc. Fume from lead burning. Fume and dust from melting and handling old plates.

'Painting of Buildings. Dust from handling of lead compounds and from dry-sandpapering surfaces painted with a lead paint.

'Shipbuilding. Dust produced by the chipping and scraping off of lead paint.

'Other Industries. Dust or fume arising in such processes as glass-making.'

The observation is made that in each instance the process is associated with the production of lead dust or fume.

ATMOSPHERIC CONTAMINATION: DUST AND FUMES

The prime need for dust and fume control in the prevention of lead poisoning was insistently preached by Legge, whose axioms pronounced a quarter of a century ago are as valid today as ever. They may well be re-stated:

'Practically all industrial lead poisoning is due to the inhalation of dust and fumes; and if you stop their inhalation you will stop the poisoning.

'If you can bring an influence to bear external to the workman (i.e. one over which he can exercise no control) you will be successful; if you cannot or do not, you will never be wholly successful.

'Unless and until the employer has done everything—and everything means a great deal—the workman can do next to nothing to protect himself, although he is naturally willing enough to do his share.

'All workmen should be told something of the danger of the material with which they come into contact and not be left to find it out for themselves—sometimes at the cost of their lives.' (Legge—1934).

Since it is the lead that is breathed that constitutes the main danger to health, certain permissible limits have been set for the atmospheric lead content if poisoning is to be prevented. The generally accepted specification until recently was a maximum of 1.5 mg. per 10 cu.m. of air, although some workers have suggested a less stringent standard (Hamblin & Weber, 1947; Winn & Shroyer, 1947). At the conference of the American Association of Industrial Hygienists held in April 1957 it was recommended that the permissible limit be changed to 2 mg. per 10 cu.m. of air.

Sampling and analysis of the lead content of the air in workrooms are involved procedures, and, as Kehoe (1951) has pointed out, demand a knowledge and skill far beyond that of the usual laboratory technician. The rationale of air sampling as a measure of the exposure of workmen is founded upon the fact that respirable particles of lead compounds remain suspended in the air for considerable periods of time, during which they are subject to inhalation and absorption from the respiratory tract.

It has been shown by Davies (1949) that the inhalation risk for dust particles of a size greater than 6 microns is relatively low, as the larger-size dust particles do not reach the deeper portions of the respiratory system. The great majority are retained in the nose. It is considered by some workers that absorption may take place from the naso-pharynx (Blumgart, quoted by Cantarow and Trumper).

It is not proposed to describe the methods and equipment necessary for air sampling. As far as is known, sampling facilities, except those provided by the Bureau of Standards, are not generally available in this country. At this stage I would urge that steps should be taken to render more modern techniques for controlling factory hygiene available to the smaller workshops and to industries which are not economically able to develop them independently.

There is much to recommend air sampling as a method of

control. It must be emphasized, however, that apart from the considerable skill necessary in carrying it out, dependable interpretation of the results comes only with experience. For instance, the atmosphere in the neighbourhood of a lead-pasting operation in a battery plant may yield consistently low lead concentrations, yet toxic effects arising from dust from the dried paste on the workers' clothing may be observed among the personnel involved. Thus whilst immediate action may be taken on the discovery of high 'lead in air' concentrations, medical supervision of the workmen concerned must not be relaxed where low concentrations are observed.

Modification of Processes. The possibility of substituting less hazardous ways of carrying out industrial operations should always be borne in mind. Examples of these are the use of mechanical appliances for the mixing of lead oxides to form pastes, or using coarse files instead of power-driven abrasives or sandpaper for smoothing and shaping the solder covering the welded joints in motor-car body manufacture. Much has been done by the designers in reducing the lead hazard in motor-car body building. Attention to this aspect of manufacture has led to the reduction of the quantity of solder per body to less than 1/10th of that formerly used, with a corresponding lessening of air contamination. In the pottery industry the substitution of leadless and low-solubility glazes for lead carbonate on the recommendation of Sir Edward Pope, Principal Chemist of the British Government Laboratory at the turn of the century, completely revolutionized the industry. Whereas in 1900 the manufacture of ceramics carried almost the highest incidence of industrial lead poisoning, today it is a relatively safe occupation.

Plant Design. Attention given to the potential hazards of the various operations contemplated when the plant design first appears on the drawing board will yield incalculable dividends when the plant goes into operation. Naturally little can be done to established plants in this regard, but when changes in production methods take place, opportunities to improve working conditions may present themselves.

Isolation of Hazardous Operations. Operations carrying a high exposure risk should be isolated from the general workshops in a plant and the enclosure mechanically exhausted. Examples of these are paste-mixing rooms in battery plants or solder-discing booths in motor-car manufacture. The workmen carrying out these operations naturally require special protection such as air-supplied respirators.

Ventilation. As a general principle ventilating systems should be designed to exhaust fumes and dust at their points of origin. Attempts at dilution by the introduction of fresh air are rarely successful. Care, however, must be taken to ensure that the contaminated air is not re-introduced elsewhere in the plant.

Buildings and Equipment; Housekeeping. Time does not allow for detailed consideration of the most suitable types of building and equipment or of specific housekeeping methods. Generally speaking, dust must not be allowed to collect in any quantity, and removal should be effected by washing down with water, by sweeping with oiled sawdust, or by means of mobile suction apparatus.

Melting Pots. Temperature Control. Lead melts at 327.5°C, but does not give off appreciable vapour below 800°C. Therefore, if melting pots are thermostatically controlled so as not to exceed the latter temperature, local exhaust is not necessary. As boiling point (1629°C) is approached volatili-

zation to a dangerous degree takes place, and mechanical means of exhausting the fumes are essential.

'Drossing Off'. The greatest care is essential in 'drossing off' the oxides from molten lead or agitating the surface. These oxides are of light weight and flaky and when disturbed are easily projected into the air. Unless effective exhaust ventilation is provided, it is necessary to protect the workmen by means of respirators.

MEASURES DIRECTED TO THE INDIVIDUAL WORKMAN

Personal Protective Equipment. When operations are of such a nature that it is impossible to ventilate effectively, the wearing of respirators will be required. The selection, fitting, supervision in use and maintenance of protective devices demands careful consideration and effective control, and should be in the hands of trained and responsible persons.

In the pasting operation in battery plants or similar jobs involving heavy contamination of clothing, the workman may with advantage wear a rubber or plastic apron, which can be taken off and washed down at frequent intervals during the working day.

Abolition and Sanitary Facilities. Showers and lockers should be arranged in such a way that the workman must necessarily wear and keep separate two sets of clothing. The contaminated work clothing should not be taken to workmen's homes, where children, who are highly susceptible, may be exposed to the toxic substance. The workman should be warned of the need for careful personal hygiene, both in his own interests and those of his family.

Lunch Rooms. Eating in workrooms should be absolutely prohibited. In order to enforce the rule it will be necessary to provide proper eating facilities. Lunchrooms should be isolated from workshops. Workmen should be required to wash thoroughly before meals. Smoking, too, should be prohibited in the workrooms.

TABLE I. CASES OF LEAD POISONING NOTIFIED, AND DEATHS DURING PERIOD 1900-1955 (ENGLAND AND WALES)

Industries	1900	1920	1930	1940	1945	1950	1954	1955	Total
Smelting Metals...	34 ¹	45 ³	37 ¹	11	5	3	2	2	139 ⁵
Plumbing & Soldering...	9	3 ¹	6 ¹	4	2	1	1	2	28 ²
Shipbreaking...	—	3	24	6	1	27	9	4	74
Printing...	18 ²	9	7	—	—	—	—	1	35 ²
Other Contact with Molten Lead...	30 ¹	13 ²	19 ³	21 ¹	1	2	4	18	108 ⁷
White & Red Lead Works...	377 ⁶	28	3 ¹	17	5	4	7	2	443 ⁷
Pottery...	210 ⁸	25 ¹³	23 ¹⁰	6 ³	—	1	—	—	265 ³¹
Vitreous Enamelling...	11	2	2	1 ¹	1 ¹	2	—	1	20 ²
Electric Accumulator Works...	33	47 ²	36	15	16 ¹	7	18	11	183 ³
Paint and Colour Works...	56 ¹	9	6 ¹	7 ¹	6	2	3	6	95 ³
Coach & Car Painting...	70 ⁵	13	10	—	1	—	—	—	94 ⁵
Shipbuilding...	32 ²	9	5 ¹	1	1	1	—	1	50 ³
Paint used in Other Industries...	50 ⁵	10 ¹	5	5	—	—	—	3	73 ⁶
Other Industries	122 ⁷	18 ¹	11	4	3	5	5	16	184 ⁸
Painting of Buildings...	—	46 ²¹	66 ¹³	10	3	2	—	2	129 ³⁴
Totals...	1052 ³⁸	280 ⁴⁴	260 ³¹	108 ⁶	45 ²	57	49	69	1920 ¹²¹

Raised figures denote deaths.

This table was compiled from data furnished by the courtesy of Dr. E. R. A. Merewether, C.B.E., F.R.C.P., H.M. Senior Medical Inspector of Factories.

Absorption from the Gastro-Intestinal Tract. Although the main portal of entry is through the lungs, nevertheless absorption of ingested lead does to some extent take place through the gastro-intestinal tract—10% according to Kehoe.

Measures must, therefore, be taken to educate the workman regarding the dangers of eating with contaminated hands or of commencing work on an empty stomach.

Absorption from the Skin. Tetra-ethyl lead calls for separate consideration. No other lead compound is absorbed quickly through the unbroken skin. Owing to its volatility at low temperatures it also constitutes a dangerous inhalation risk. Its chief use is as an anti-knock additive to petrol. The mixing is not carried out in this country. The hazards, therefore, are here confined to persons cleaning out petrol tanks and disposing of the sludge. This is a highly dangerous operation unless great care is exercised (Kehoe, 1943). The oil companies impose stringent safety measures.

MEDICAL CONSIDERATIONS

In the final analysis the effect upon the individual leadworker is the real test of the safety or otherwise of a particular process. It may be said that the only really satisfactory sampling machines are the workers themselves. It is necessary, therefore, to know not only the operation that is being currently performed in each case, but also the number of hours worked per week, how long the individual has been employed on that particular job and any lead exposure that he may have been subjected to in the past, both in his present and previous employment. Furthermore, the quantity of lead absorbed through the lungs varies with the respiratory exchange, which in turn is influenced by the physical effort the work entails.

Pre-enlistment Examinations. The supervision of leadworkers begins at the time of engagement of the worker. Examination on that occasion provides the base line from which any future change can be judged. It should include the usual laboratory procedures in order to establish the norm for the individual. Unfortunately, there appear to be no reliable criteria to indicate individual susceptibility or resistance.

Sex and Age. It has, however, been considered for many years that women are more susceptible to the effects of lead than men. Particularly was this related to their reproductive organs and a higher liability to encephalopathy (Cantarow and Trumper). Oliver (1908) recorded many instances of disturbances of menstrual function and repeated abortion in women exposed to lead. He writes of lead that 'its special influence upon women during pregnancy is the cause of a great destruction of human life. A large percentage of children born to leadworkers die within the first few months of life. The percentage of still-births is as high as miscarriages are frequent . . . With lead poisoned pregnant women, who had been in the habit of miscarriage, I found the only possible way for them to go to full term and have a living child was to get them to retire from the lead works altogether'. Legge & Goadby (1912) state quite categorically that women are more susceptible to poisoning by lead than men. Bell and others have estimated the minimum toxic dose of colloidal lead, given intravenously, as 40 mg. for females and 100 mg. for males. Despite some dissension on the part of Baetjer (1946) these observations, and those of many other workers in this field, confirm the wisdom of the UK Factory Regulations forbidding the employment of women on certain specified operations involving the use of lead. The same would seem to apply to young persons, whose susceptibility has been estimated by certifying surgeons to lead factories in the UK as being at least twice that of adults (Legge and Goadby, 1912).

Individual and Family Susceptibility. Most observers have drawn attention to an idiosyncrasy to plumbism, and it would be strange if lead were to differ from other substances and drugs, to which some persons show marked sensitivity whilst others are relatively tolerant. Oliver described the disastrous effect lead had upon members of a particular family in the following terms: 'I have known member after member of a family—all strong, healthy men, who had been employed as smelters—die from lead poisoning and its sequelae, while their comrades escaped'. Legge and Goadby, who cite cases in their own experience, aver also that persons with red hair and fresh complexions are notably more susceptible than dark-haired persons. They refer particularly to Italian workers, whom they consider are more tolerant than their English comrades doing the same work. In our experience the increasing ratio of Coloured to White workers employed on certain operations has coincided with the virtual disappearance of cases exhibiting evidence of plumbism, but since improved engineering and supervision were also coincidental, it is not possible to draw any conclusion regarding a racial difference in tolerance to the toxic agent. As for red-heads, we have on record one red-headed workman who has been found to be unemployable on any lead operation, despite repeated attempts on his part.

Acquired Tolerance. Legge and Goadby postulate a gradually acquired resistance to lead. They do not support the views of Oliver that one attack of plumbism predisposes to another and that prolonged exposure does not confer immunity. Our experience inclines us to the latter opinion. Return of a worker to lead work after a period of non-exposure on account of evidence of mounting absorption has in a significant number of cases resulted in rapid deterioration. Cantarow and Trumper sum up the evidence in the phrase 'the consensus at present is that there is little substantial evidence that tolerance to lead may be acquired by prolonged exposure'.

Conditions meriting rejection for lead work. In addition to the exclusion from the lead trades of women, young persons and those with significant family histories, applicants who furnish a family or personal history of porphyria should be denied employment of this nature. Dean (1956) has described the stigmata and indicated the family connections by which the congenital porphyric may be identified. Since lead is considered as a haemopoietic poison (Kench, Lane and Varley, 1952), persons who may be suspected of suffering from potentially disordered haemopoiesis should rigidly avoid exposure to the metal. Other conditions calling for rejection are anaemia, chronic alcoholism, peptic ulcer, hypertension and nephritis. Persons in a low state of health owing to chronic infection or malnutrition, are likely to have their health further impaired if, in addition, they are subjected to a lead exposure. When the work is prone to be associated with heavy contamination of the workmen's person or clothing, it is essential to select intelligent persons of tidy, clean and methodical habits.

Periodic Examination. The objects of the periodic examination of leadworkers are (1) to estimate the degree of individual absorption and, by employing appropriate measures, to prevent the development of poisoning, and (2) to relate the clinical and laboratory findings to the work performed and thus to identify and eliminate dangerous processes or areas. In order to achieve these objects the doctor will require to pay attention to the history given by the workman and his

TABLE II. FREQUENCY OF EXAMINATIONS
(UK FACTORY ACT REGULATIONS)

Processes	Frequency of Medical Examinations
Heading of yarn (died with a lead compound)	Quarterly (or such other intervals as prescribed by the Chief Inspector of Factories)
Vitreous enamelling of metal and glass	
Tinning of metal hollow-ware, etc.	
Electric accumulator manufacture	Monthly
Paint and colour manufacture	
Lead smelting and manufacture of red lead, orange lead, flaked litharge	
Indiarubber manufacture	
Pottery: manufacture and decoration	Monthly. For certain kinds of employment (not entailing exposure to lead) yearly, and for others half-yearly
Compounds of lead: manufacture	Weekly (or such other intervals as prescribed by the Chief Inspector)
Painting of vehicles (with lead paint)	If prescribed by the Chief Inspector.
Lead paint (painting of buildings)	

supervisor, to observe the physical signs of incipient intoxication, and to interpret the laboratory reports which he may receive. The frequency of examination enjoined by the UK Factory Act Regulations is shown in Table II.

SYMPTOMS AND SIGNS

Gastro-intestinal. The commonest disturbances due to lead absorption are associated with the gastro-intestinal tract. The earliest symptom is usually loss of appetite, frequently accompanied by ill-defined intermittent abdominal pain of irregular periodicity located around or below the umbilicus. There may be some loss of weight. The tendency towards constipation develops slowly. Ultimately it becomes obstinate. Occasionally one encounters cases of alternating diarrhoea and constipation. There is often a complaint of a bad 'metallic' taste in the mouth; vomiting may occur, but is not usual as an early symptom. Colic, when it occurs, is sudden in onset and is characterized by marked exacerbations and remissions. Often the severity of the pain causes the patient to draw up his legs and press his clenched hands into his abdomen to get relief. This observation may be important in diagnosis, as is the immediate cessation of pain brought about by the intravenous injection of calcium gluconate; in lead poisoning the pain usually disappears even before the completion of the calcium injection. A pronounced drop in the pulse rate coincides with the exacerbations of colic. Legge and Goadby mention a figure as low as 20 beats per minute. Generally it is between 40 and 50 per minute. The temperature, too, is as a rule subnormal, although occasionally at the commencement a moderately raised pyrexia (100°) may be recorded. A point to be noted is that there is no rigidity and little tenderness of the abdomen when it is examined in the intervals between the spasmodic attacks.

Nervous System. Most cases of lead poisoning are mixed in type and, coincident with the gastro-intestinal symptoms

mentioned above, general weakness, headache, giddiness and insomnia may be causes for complaint. Tremor of the fingers and muscular atrophy, especially of the extensors of the wrist and fingers, may be observed. Weakness of the muscles may be detected by the doctor placing the tips of the fingers of his examining hand into the downward-facing palm of the patient's outstretched and extended hand and testing the extensor spring of each finger against the ball of his thumb. The commonest type of paralysis is that of the dropped wrist. Legge and Goadby remark on the insidious onset of the paresis but, according to Oliver, the attack may develop suddenly. The long extensors of the middle and ring fingers are as a rule the first to be picked out, the weakness progressing a little later to the other extensors. The supinator longus muscle (brachio-radialis) characteristically escapes involvement. Neuritic pain is not a feature to be expected. Other muscles may be involved, especially the deltoid and biceps. The group to be affected appears to be largely determined by the amount of occupational strain to which it is subjected. Lead paralysis is not associated with short exposures, but usually occurs after a long period of comparatively low-grade absorption. Enquiry into the clinical history will elicit evidence in most cases of repeated episodes of intoxication of a mild type, often related to the gastro-intestinal system. With removal from exposure and appropriate treatment complete recovery is usual within weeks or months.

Encephalopathy is a rare development in the modern factory. When it occurs it is usually the result of exposure to tetra-ethyl lead. The occurrence of persistent, severe headache, not to be confused with the intermittent, mild headaches associated with the gastro-intestinal symptoms, is of grave import. The onset of severe symptoms may be abrupt, a short period of vague malaise leading to a state of extreme restlessness, excitement, muscular twitchings, convulsions, delirium, coma, blindness, partial or total, and insanity (Legge, 1934). Death may result in a few days; recovery is usually slow and may be incomplete.

Arthralgia. Pain occurring in the vicinity of the large joints and deep-seated tenderness of the muscles are frequently mentioned by the workman. There appears to be no relationship to the course of the nerve trunks.

Renal Disease. Although chronic renal and vascular changes have been ascribed by English observers to long-continued exposure to lead (Oliver, Legge and Goadby, Lane), American writers consider that the facts in this regard must await further clinical investigation and confirmation (Committee on Lead Poisoning, 1943). No cases of renal disease have developed in a group of about 120 motor-car body workers at Port Elizabeth, a number of whom have been exposed for 11 years and a few for almost 20 years. Battery workers of 5 years' exposure also have been free of this disease. An explanation of the absence of renal disease as a complication in America and South Africa and its occurrence in the UK lies possibly in the fact that in the UK there is generally a lower labour turnover and workmen tend to remain on the same job for much longer.

Signs of Special Significance

Pallor. The development of an ashen pallor and a pinched drawn expression about the nose and forehead in a lead-worker is a sign which merits further attention. It is not necessarily associated with anaemia. It has been suggested that this pallor is an expression of an inadequate peripheral circu-

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lation or spasm of the capillaries of the skin. An exceptional degree of blanching of the upraised palms may be observed.

The Lead Line. The lead or Burtonian line has a characteristic appearance, which as a rule presents little difficulty in its certain recognition. It consists of small deposits of lead sulphide arranged as a series of blue-black dots situated about a millimetre from the gum margin. It is always found next to a tooth; hence it does not occur in the edentulous subject. It is best seen in mouths where the oral hygiene is poor, and is likely to be absent, despite heavy lead absorption, in persons with healthy gums and sound teeth. Where there is doubt, magnification by a hand lens (the electric auriscope with the speculum removed is useful) should clear up possible confusion with other forms of pigmentation. A bluish tinge is sometimes seen in pyorrhoea, but it is diffuse and reaches the gum margin. Expression of the blood with a glass slide will settle any difficulty in differentiation. The staining of the tooth caused by subgingival tartar may require the removal of the tartar and re-examination in order to distinguish it from a true lead line, or the insertion of a white visiting card between the gum and tooth may be helpful. The pigment in the gums occurring naturally in dark-skinned races is distributed as irregular dark brown patches, rarely to be found on the lingual aspect of the gums. This fact is of practical value, as a common site for the development of a lead line is opposite the bicuspid and lower molars in the lingual gum tissue (Kehoe, 1949). The significance of the lead line will be considered below.

Absorption and Excretion of Lead

Lead being a normal constituent of the soil it is naturally ingested with food, and its presence in the human body is only to be expected. One needs to consider only such obvious sources as lead-painted surfaces, the soldered seams of tinned-food containers, lead water pipes, insecticide sprays, earthenware vessels, tetra-ethyl fumes in city streets, to realize that the absorption of the metal is much greater in the more highly evolved communities. A distinction must be made between evidence of lead absorption and a diagnosis of lead poisoning, which is justified only when actual illness is experienced.

Kehoe *et al.* (1935) estimated the normal absorption and excretion of lead among groups not industrially exposed both in primitive societies in Mexico and among normal healthy adults in North America. Among the latter, the mean daily quantity ingested was found to be approximately 0.30 mg., which was significantly higher than the Mexican findings. The lead in the blood, mainly found in the erythrocytes, varies from 0.01 mg. to 0.06 mg. per 100 g. of blood (mean, 0.03 mg.). Urinary lead concentrations normally range from 0.01 to 0.08 mg. per litre (mean, slightly greater than 0.03 mg. per litre).

Effects of Increased Exposure to Lead

Lead in Urine. When an individual is exposed to the absorption of lead in increased quantities the concentration of lead excreted in the urine reaches and is maintained at a higher level. Thus the urinary lead concentration may be used as an index of the degree of exposure of an industrial worker and of the group. Lane (1949) mentions that quite often healthy men have high lead concentrations in the urine, whereas cases of clinical poisoning may yield normal urinary lead levels. Nevertheless, writing in 1952, he expresses the opinion that no examination can wholly replace the estimation of lead in the urine as a supervisory measure.

Kehoe (1951), whilst stressing the stringent care necessary in the collection of specimens, places much value on the information as to the extent and significance of the lead absorption of an individual to be gained from a properly carried-out determination of the rate of urinary excretion, especially in medico-legal cases. It is generally accepted that values up to 0.14 mg. of lead per litre of urine are compatible with safe occupational working conditions, and that concentrations above 0.18 mg. per litre are associated with dangerous manifestations of lead exposure, but alone are not indicative of lead poisoning. Belknap (1949) points out that, in a case where a high level of urinary lead is found, one can say no more than this sign is often seen in groups of workers with lead intoxication. The qualitative finding of lead in urine merely means that lead is being absorbed and excreted; beyond that it is of no significance.

Whilst the finding of a raised urinary lead concentration is a specific and delicate indication of increased absorption, the difficulties attendant upon obtaining uncontaminated samples from industrial workers, the technical skill necessary in their analysis, and the inexact correlation with clinical plumbism, would seem to render it a somewhat impractical test for general use in the control of the health of leadworkers.

Lead in Blood. Estimation of the lead concentration in the blood has been successfully used in the US for some years in the supervision of workers exposed to lead. As mentioned above, the blood of unexposed, healthy persons in North America has been found to contain between 0.01 to 0.06 mg. of lead per 100 g. of blood. Among men continually working with lead a level of 0.07 to 0.08 mg. is not unusual and is considered to be compatible with good health. Tompsett and Anderson (1939) suggest that a blood-lead concentration of 0.10 mg. per 100 g. indicates a precarious condition. In the opinion of Patty (1949) a blood lead over 0.10 mg./100 g. carries the worker into the range in which poisoning may occur and constitutes an indication for further investigation of the affected individual and his working conditions. He concluded as a result of his investigations into the significance of lead in biological fluids that blood-lead samples, when collected under controlled conditions, are more reliable than spot urine specimens. Further, he maintains that blood-lead concentrations in the individual are subject to little variation. The difficulties associated with the analysis of blood for lead are such that too much significance must not be given to the result of a single test unless associated with clinical symptoms or confirmed by an additional test. Lane considers that the value of blood-lead analyses has been exaggerated by some authorities; he has found healthy workers showing high values while a case of plumbism showed values persistently within the normal range.

Punctate Basophilia or 'Stippling'. The uncertainty concerning the significance of punctate basophilia is indicated by the variation in the 'danger levels' laid down by different authorities. They range from 100 stippled cells per million erythrocytes to 3,000. Some 6% of several thousand apparently healthy persons free from occupational lead exposure were shown to have 1,000 or more stippled cells per million erythrocytes (Kehoe, 1949). Furthermore, it is well known that an increase in the stippled cells over the number commonly found in normal persons is not specific for lead absorption and is found in a variety of conditions. It is regularly seen in severe secondary or primary anaemia, leukaemia, benzene poisoning, and Hodgkins disease. Belknap (1935, 1949)

points out that in these conditions the anaemia manifests itself to a major degree before the appearance of the stippled cells, and makes the observation that the appearance of stippled cells before the development of anaemia is almost diagnostic of lead intoxication. Kehoe (1951), while emphasizing the non-specificity of basophilic stippling as indicative of abnormal absorption of lead or lead intoxication, states categorically 'that failure to find any abnormality of the blood in this respect argues strongly, indeed, against the likelihood that the illness under consideration is the result of the absorption of inorganic compounds of lead'. Lane (1949) concurs with this opinion; he draws attention to the need for a uniform manner of carrying out stippled-cell counts, and describes a simple method by means of dark-ground illumination. There is a tendency in cases of long-continued absorption for the stippled-cell count to drop to low or normal figures, despite the continued absorption of lead in undesirable quantities. Many workers have observed the absence of a raised stippled-cell count in chronic lead poisoning (Waldman and Seideman; Magnuson and Raulston).

The variation in the degree of individual response, and the variation noted in the individual from day to day, make this test, in the opinion of some observers, too unreliable for the practical control of lead-exposed persons. Nevertheless, some workers who have successfully maintained medical supervision of leadworkers have used the routine stippled-cell count as their chief laboratory aid.

White Cell Count. Shiels (1936, 1950) has drawn attention to the increase in the ratio of large lymphocytes plus monocytes to small lymphocytes as a result of lead absorption, and considers the cell ratio a valuable guide to the prevention and diagnosis of lead poisoning.

Porphyria Test

Porphyria has been described as occurring in a number of conditions, viz. congenital porphyria, cirrhosis of the liver, alcoholism, pernicious anaemia and poisoning by arsenic, acetanilid, acetylsalicylic acid, paraldehyde, morphine and barbiturates.

The early workers attributed porphyria excretion, whether normal or resulting from disease or intoxication, to the breakdown of the iron-porphyrin in the haemoglobin. More recent opinions are against this view, and hold that the porphyria excreted is not a breakdown product of haemoglobin, but derives from the processes of its synthesis (Goldblatt and Goldblatt 1956). Cantarow and Trumper interpreted the increase of urinary porphyria in plumbism as due to the inhibition by lead of the introduction of iron into the haemoglobin molecule, which in turn leads to an excess of copro-porphyrins. Whatever its origin, haemolytic or haemopoietic or both as postulated by Kench, Lane and Varley (1952), porphyria furnishes early and reliable evidence of lead absorption. Goldblatt gives his opinion 'that in lead absorption copro-porphyrinuria is a sign of the first importance, is of diagnostic, preventive, clinical and medico-legal importance and has great clinical value because of its constancy, its intensity, its early appearance and its persistence.'

Since the reports of the value of the modified semi-quantitative porphyria test of de Langen and ten Berg as an index of lead absorption appeared in the literature in 1950 (Waldman and Seideman; Maloof; Johnson and Whitman) we have used this test, modified further, as a routine measure

in the medical supervision of workers employed in the manufacture of motor-car bodies and batteries.

The modified test consists in taking 5 c.c. of freshly-voided urine in a test-tube, and adding 2 c.c. of glacial acetic acid, 2 drops of hydrogen peroxide (3%), and 5 c.c. of ether. The test-tube is then corked, shaken and left in a cool room for a period of not less than 12 hours, after which the ether layer of the specimen is examined for fluorescence under ultra-violet lamp radiation of 3,660 angstroms in a darkened room. It was observed* that considerable intensification of fluorescence takes place as a result of a minimum delay in 'reading' of 12 hours, but that no further intensification occurs if the specimen is allowed to age further. The cause of this increase in fluorescence is obscure, but it is thought that a non-fluorescing porphyrin precursor becomes converted into porphyrin and thus produces a more intense reaction. In some instances a negative result is transformed into a positive finding.

(Since the above was written, recent work by Holecěk (1957) has been published revealing the fact that daylight causes a rapid disintegration of the copro-porphyrin precursor in the untreated urine. In the ether solution, however, light induces the conversion of the precursor to the fluorescing copro-porphyrin. It is important, therefore, to avoid exposure of the urine to daylight until the ether solution has been prepared.)

The intensity of the red fluorescence in the ether layer is proportional to the concentration of the urinary porphyrins. The colour in the ether layer is accordingly classified into 6 grades, viz.: (1) pale blue or green colour (normal urine), (2) pale pink fluorescence (trace of porphyrin), and (3) pink, (4) pink red, (5) red and (6) deep red fluorescence, according to the concentration of porphyrins.

The advantage of this test lies in its simplicity, ease and rapidity of performance and the absence of necessary expensive equipment. It is particularly useful as a screening device.

During a period of 6 years' observation of a group averaging approximately 200 workers employed in the manufacture of motor-car bodies or batteries, both occupations carrying a high hazard, there has been no case exhibiting clinical evidence of lead absorption or frank plumbism which has not yielded an unequivocally positive porphyrin result.

We believe that if the test is properly performed, i.e. if the solution is prepared in artificial light immediately after voiding and is allowed to age for at least 12 hours, false negative results do not occur. Furthermore, its sensitivity causes it to be an accurate indicator of danger spots. A positive result, however, does not necessarily mean that toxic effects will manifest themselves. A number of leadworkers regularly examined over several years have been found to pass urine consistently containing moderate amounts of porphyrin without any observable deterioration in their health. Frequent checks of the air they have been breathing have returned acceptable lead concentrations, the lead found in blood and haemoglobin estimations has not departed from satisfactory levels, and lead lines have been absent. The interpretation is that they have been absorbing and excreting lead in quantities that are abnormal but are not harmful.

Haemoglobin Estimation

The anaemia which occurs as a result of exposure to inorganic lead is haemolytic in type (Wintrobe; Whitby and Britton); a reduction in the erythrocyte count is accompanied by a corresponding or greater haemoglobin drop. A fall in haemoglobin usually coincides with the appearance of urinary porphyrins, but this is not invariable; occasionally an increase in the haemoglobin level may be observed despite considerable porphyrin excretion. It is, however, rare for symptoms of lead intoxication to develop unless accompanied by a reduc-

* This observation was made in 1951 by Mr. U. Q. Els of my department, who carries out these tests.

tion in haemoglobin to below 80% (11.8 g. per 100 c.c. of blood). A severe anaemia is not characteristic of lead poisoning, the haemoglobin seldom falling below 60% (8.9 g. %).

APPRAISAL OF RESULTS

Experience has shown that for practical purposes the diagnosis of lead poisoning and the degree of absorption can usually be arrived at by relatively simple methods. In addition to the occupational and clinical history and changes in the appearance or behaviour of the workman (often discernible earliest to the eye of an informed foreman), there are the special signs and laboratory aids to be taken into account.

Though it is generally agreed that the presence of the characteristic gingival lead line is associated with excessive absorption, the fact that it is never present in the edentulous, and that good oral hygiene often prevents its development even in cases of definite clinical intoxication, detracts greatly from its value as a sign of absorption. The presence of a lead line does not itself signify lead poisoning; it has been observed for long periods in persons in apparently good health.

Again, although blood and urinary lead estimations are valuable means of assessing the degree of exposure to lead they are time-consuming and complicated procedures, requiring a high degree of technical skill. In addition, the collection of uncontaminated specimens, especially of urine, from large numbers of workers presents difficulties not easy to overcome. To my knowledge these tests are not being undertaken by routine in this country. It has been shown that serious symptoms are unlikely to develop at the lower lead levels stated above, but cases in the higher ranges require close observation in order to prevent lead intoxication.

Suppled-cell counts, too, when large numbers of blood specimens are involved, take time and are a strain to carry out. We have not used basophilic counts as a routine measure for some years, but we employ the test in cases presenting difficulties of diagnosis or for confirmatory purposes.

The two tests that we have found most useful are the porphyrin test and the haemoglobin estimation. Medical orderlies, industrial nurses, chemists and technicians can be trained in a short time to carry out these tests with reliability. This is particularly important where large numbers of workers are concerned. The minimum loss of working time involved and other considerations render these procedures both practical and economical and thus generally applicable to industry.

Cases of suspected lead poisoning occur, however, that require all possible forms of evidence, clinical and laboratory, to be marshalled and critically appraised in order to establish a diagnosis.

General Management and Disposal of Cases of Absorption

Our practice is to examine regularly every person who is exposed to a lead hazard at his work. The frequency of examination depends upon the degree of exposure, estimated as the result of experience. Motor-car body builders and battery workers are examined at monthly intervals, cleaners and maintenance men every quarter. The routine procedures employed are (1) history taking, (2) clinical examination, (3) the urinary porphyrin test, (4) haemoglobin estimation. In doubtful cases specimens of blood are sent by air to the US for lead estimations and blood smears are examined for basophilia. The last two methods are being used progressively less frequently.

Criteria for Suspension from Lead Work

The development of vague symptoms, an increase in the urinary porphyrin, or a fall in the haemoglobin level are signals for action. If the haemoglobin falls to 90% (13.4 g. per 100 c.c. of blood) or below, the patient is investigated further and suspension from lead work is advised unless the operation can be rendered safe.

Before the institution of the porphyrin test in 1951 acute episodes of lead intoxication were of relatively frequent occurrence in the works with which I am concerned—10 cases in 2 years. Since 1952 there has been no case of lead poisoning among motor-car body builders under my supervision.

Table III represents a complete survey of all workers exposed to lead and employed in the manufacture of motor-car bodies during the period March to October 1952. We used the porphyrin test as a routine in our medical supervision, and recommendations have been based on the findings considered together with clinical data and haemoglobin estimation.

TABLE III. SURVEY OF BODY SHOP WORKERS, 1952

	March	September	October
Number of workers	98	94	89
Number of cases of lead line ..	12	7	5 (fading*)
Number edentulous	36	36	36
<i>Porphyrin Test: Cases showing fluorescence:</i>			
Deep red	13	—	—
Red	6	—	—
Pink red	10	1	—
Pink	6	10	4
Trace	11	25	15
Negative	52	58	70
Number of positive porphyrin cases with Hb. 90% and below	13	2	0

* Since March 1953 there have been no cases exhibiting lead lines in this department.

tions. Attention was mainly concentrated on industrial techniques with a view to reducing the amount of lead used and consequently the degree of air contamination. The effect on the percentage of cases exhibiting high degrees of fluorescence is clearly shown in the table. As approximately 40% of the workers in this area are toothless, the lead line is virtually invalidated as an index of the lead-absorption status.

TABLE IV. PORPHYRIN TEST RESULTS ON 55 BODY SHOP LEADWORKERS EMPLOYED CONTINUOUSLY THROUGHOUT PERIOD MARCH—OCTOBER 1952

	March	September	October
<i>Cases showing fluorescence:</i>			
Red + .. 12.73	—	—	—
Red .. 7.27	—	—	—
Pink Red .. 14.55	—	—	—
Pink .. 10.91	9.09	—	1.96
Trace .. 9.09	29.09	—	21.15
Negative .. 45.45	61.82	—	76.92

of the group. The picture reflected in the table is a somewhat inaccurate representation of the varying situation, for during the period under consideration there was a constant coming and going of workers in the department concerned. In Table IV are shown the porphyrin status of those individuals who were continuously employed within this department during the whole period under review.

Among battery workers under supervision for this period there has been one case of mild colic and one case of wrist-

drop. The colic developed in a workman recommended 2 months before the attack for suspension from lead work but who, owing to an oversight, remained on the job. This case illustrates the validity of the criteria for removal from lead exposure.

The wrist-drop occurred in a person long employed on battery work, who had been recommended for suspension in 1953 but who, owing to seniority, was difficult to place elsewhere in the organization. With a good deal of misgiving he was given a supervisory job carrying a low exposure. Despite the fact that his blood-lead figure, haemoglobin level and stippled-cell count all reverted to normal and only the urinary porphyrins remained excessive, he presented a wrist-drop suddenly one morning 4 years later.

It may be of interest to note that several hundred pre-enlistment examinations have been carried out with the finding of positive porphyrin tests in only 2 cases. One was a man previously employed elsewhere on battery manufacture who had only just recovered from a bout of severe colic; the other was an applicant who had been employed in another factory on motor-car body building.

Experience inclines us to the view that only those workmen yielding positive urinary porphyrin results on periodic examination need further observation, i.e. submission to clinical and haemoglobin examination. Furthermore, if the porphyrin test were applied as a routine screening measure in all lead industries, virtually all cases of significant lead absorption would be brought to light. For complete safety a trace reaction or more should be considered positive.

Return to Lead Work Following Suspension. The restoration of the haemoglobin to 100% (14.8 g. per 100 c.c. of blood) and the absence of urinary porphyrins over a period of 2 months permits the return to lead work. This usually involves four or five months away from exposure if no special treatment is employed.

EDTA. 'Deleading' procedures, until the introduction of Ca EDTA (Calcium ethylene diamine tetra-acetate), were regarded by most authorities as dangerous and, since 'deleading' is achieved by normal physiological processes within one or two years free from exposure, active measures were not considered justified (Wilutz 1949). Ca EDTA, from the accounts appearing in the literature, would appear to be a safe 'deleading' agent, and its use might reasonably be expected to shorten suspension from lead work. Kehoe (1955) warns against its misuse for purposes of prophylaxis in industry. In our experience of 9 cases showing signs of excessive absorption, Ca EDTA administered orally appears to be a simple, safe and effective method of deleading. The dosage employed was 2 g. twice daily for a period of 3 weeks. In 8 of the 9 cases treated, porphyrin was cleared from the urine within that period and there was an appreciable rise in the haemoglobin level. In the remaining case it is doubtful whether the patient took the tablets according to instructions. It is, of course, illogical to return the workman to his old work unless this has been suitably modified.

The treatment of acute episodes of lead poisoning has been rendered more effective since the advent of Ca EDTA, but it is not proposed to comment upon this form of treatment or upon 'deleading' techniques generally.

Prophylactic Methods

Milk has been traditionally given to lead workers for so many years that it is difficult to refuse its administration.

Furthermore, there appears to be some scientific evidence that on high calcium diets the absorption of lead from the gastro-intestinal tract is low, while on low Ca diets the reverse applies (Tompsett 1939). But since alimentary absorption plays so small a part in industrial lead poisoning, it is of the greatest importance that such measures as the taking of milk, aperients etc. should not divert attention from the attainment and maintenance of safe working conditions.

SUMMARY

The increasing usage of lead in South African industry calls for special consideration to be given to the care of leadworkers.

Since, with the exception of tetra-ethyl lead, industrial lead poisoning is almost invariably caused by the inhalation of dust or fume, the control measures outlined are directed at preventing absorption through the respiratory tract. These consist of plant design, ventilation, modification of processes, the substitution of less toxic materials, and the supply of protective equipment.

Medical supervision includes the selection of suitable persons for lead work at pre-enlistment examination and their subsequent periodic examination for the assessment of the degree of absorption. Serious intoxication is thus prevented and hazardous processes are identified.

The clinical manifestations of lead intoxication are described and the commonly performed laboratory procedures—examination of the blood for punctate basophilia, haemoglobin and lead content and estimation of urinary lead and porphyrins—are discussed.

The easily performed urinary porphyrin test and haemoglobin estimation have proved valuable laboratory aids in the care of leadworkers.

It is suggested that the general application to lead industries of the porphyrin test as a screening device for evidence of lead absorption would be a useful measure in the prevention of poisoning.

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ALLERGY IN CHILDHOOD: ITS PATTERN, CONTROL AND SIGNIFICANCE IN ADULT PROPHYLAXIS*

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A study of the clinical history of the middle-aged sufferer from bronchial asthma reveals either that his symptoms commenced in later life or that allergic manifestations, including nasal allergy, eczema, urticaria or asthma itself, were already present in infancy or early childhood and continued into adult life directly or after some years of freedom. These two types are significant in that the latter—referred to as the 'extrinsic' type—is, in general, aetiologically associated with allergic sensitivity to extraneous factors such as pollens, dusts, animal danders, feathers, foodstuffs, etc., which can, as a rule, be sought out and controlled. In the type where symptoms commence in adult life the pattern of causation is much more complex; physical, endocrine and psychological agencies must, in addition, be invoked for its unravelling. It is indeed a question whether this so-called 'intrinsic' asthma has a true allergic basis in the sense that symptoms result from specific antigen-antibody reactions. One of the difficulties in the clinical differentiation of these two varieties of asthma is that patients generally and physicians often do not realize that the symptoms in early life were in fact manifestations of allergy and, unless the sufferer is specifically questioned on the point, information about childhood allergy will not become available.

The purpose of this study is to draw attention to the advisability of controlling the allergic state in early youth in order to prevent the occurrence of similar or more serious symptoms in the patient's adult life. There is evidence that such precautionary measures are likely to be of benefit. In the 'extrinsic' form of respiratory allergy symptoms will develop when the specific allergens are encountered. When these are looked for, found and controlled, or the patient is desensitized against them, it is reasonable to believe that there will be a subsequent diminution of symptoms or even freedom from them. The knowledge acquired regarding his sensitivities will place the patient in a position to guard against the responsible allergens. Hurst,¹ an asthma sufferer himself and deeply versed in childhood asthma, was satisfied that the more completely attacks were prevented by removing all known and exciting causes the less irritable would the bronchial system become.

It is true that some child sufferers from allergic con-

ditions appear to 'outgrow' their symptoms. Indeed Rackemann and Edwards² in a follow-up study of 449 children who had developed asthma before the age of 13 years found that 30% outgrew their symptoms at the average age of 15 years. The reasons probably lie in changed circumstances of physiological or psychological living involving diminished contact with specific allergens, dietary modifications and improved domestic circumstances or relationships. But reliance upon 'growing out of it' in a particular case is unwarranted, for in the majority of instances this does not occur and the hope does not justify withholding the necessary allergic investigation and control from an allergic child.

FORMS OF CHILDHOOD ALLERGY

The allergic conditions of childhood are similar to those in the adult and, in the main, referable to the upper and lower respiratory tract, the skin and the gastro-intestinal tract. As the control of childhood allergy depends primarily upon its recognition, a brief review of its manifestations follows:

Respiratory Allergy

Respiratory allergy in the child is obvious when bronchial asthma or vasomotor rhinitis occurs. But even the diagnosis of bronchial asthma in infants may not be easy, for it is not always marked by typical wheezing and prolonged expiration but may be manifested by noisy breathing and moderate dyspnoea.

The upper respiratory allergic symptoms in childhood include sneezing, nasal congestion, rhinorrhoea and post-nasal drip. More commonly they are much milder and appear as sniffing, coughing or 'colds'. The parents as well as the patient become so accustomed to these gradually-developing minor symptoms that medical advice may not be sought. When, however, the persistence of these symptoms does eventually lead to medical attention, it all too frequently happens that their allergic significance is not appreciated.

Repeated attacks of 'bronchitis' may similarly pass without medical recognition of their allergic origin and the condition is treated on an infective basis. A typical letter from a physician reads: '... For the past 2 years Albert, aged 5 years, has suffered from attacks of asthma. These attacks nearly always follow a mild upper respiratory infection. The attacks are relieved by an injection of adrenalin. On a few

* A paper presented at the South African Medical Congress, Durban, September 1957.

occasions he has had bronchitis in addition and has been treated with penicillin . . . The 'mild upper respiratory infections' and 'bronchitis' were doubtless allergic manifestations. It can be taken as almost axiomatic that persistent or recurrent upper or lower respiratory conditions in infants and children, however mild, are, in the absence of some definite explanation on an organic basis, of allergic origin. The finding of eosinophiles in the nasal or bronchial secretions or in the blood, as well as history of allergy in the parents or their relatives, would lend support to such a diagnosis.

The essential differences between allergic and infective respiratory conditions must be emphasized. In allergic conditions the attacks are usually recurrent and between bouts the symptoms may be mild or absent, in contrast to the single attack of an infection where, in addition, constitutional disturbances are present and may be marked. In nasal allergy the mucous membrane is oedematous and pale, with a watery discharge showing eosinophiles, while nasal infection is characterized by a hyperaemic mucous membrane with a purulent discharge. It must be remembered that this allergic picture is less clear-cut when infection is superimposed. The allergic 'cold' is of course not contagious, and the child will probably have an allergic family background. The respiratory symptoms in allergy can usually be controlled by an antihistamine preparation, which will not help in a bacterial infection.

The question of 'infective asthma' often arises and in some cases, especially in adults, an attack of asthma may be precipitated by a true infection in the respiratory tract, as indeed it may be precipitated by any form of physiological or psychological trauma.

Eczema

It is equally important to remember that eczema in infants and children is commonly an allergic manifestation, and so also is urticaria. If this fact is recognized then treatment of childhood eczema will commence early with proper allergic investigation and appropriate therapy. But, more important, eczema is frequently a forerunner of respiratory allergy. This is now well-established and the pattern of 'eczema-rhinitis-asthma' from infancy onwards should be familiar to all. The warning should be heeded. It is true that not every child with respiratory allergy has an associated eczema, but the correlation is a close one. Confirmation of this was obtained in a study of 495 children in the 0-20 years age-group in South Africa suffering from respiratory allergy. There was an incidence of 57.1% of eczema (and urticaria) in this group.

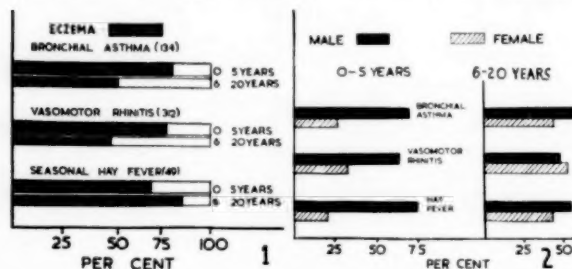


Fig. 1. Analysis of the incidence of Eczema (and urticaria) in 495 cases of respiratory allergy in the 0-20 year age-group.
Fig. 2. Analysis of the Sex Distribution in 936 cases of respiratory allergy in the 0-20 year age group.

An analysis of the incidence of eczema in the different forms of respiratory allergy is shown in Fig. 1.

Every effort should be made to find the causative factors of either eczema or urticaria, for its control may well be a factor in the prevention of respiratory symptoms later. Purdy³ found in a long-term study of prognosis in infantile eczema that between one-third and one-half of 93 cases had sequelae sufficient to encumber them for at least their first 15-20 years of life, with asthma as the leading sequel. Ratner *et al.*,⁴ discussing this allergic dermal-respiratory syndrome in 750 cases of allergy in children, stated that 59% of those who had suffered from allergic eczema at one time later developed respiratory allergy. They urged that every case of dermal allergy should be regarded as a potential case of asthma or hay fever.

Gastro-intestinal Allergy

The numerous causes of gastro-intestinal difficulties in young infants will not be discussed here; but if no obvious infection or other definite cause is found then the question of an allergic basis for the condition should be borne in mind. Vomiting, diarrhoea and abdominal pain may occur shortly after the infant has been weaned. Suspicion then naturally falls on one or other of the freshly-introduced foods, especially cow's milk. Clein⁵ found the following conditions in the study of 140 infants all allergic to cow's milk: Colic 29%, diarrhoea 24%, mucus in stools 6%, blood in stools 5%, chronic constipation 5%, anorexia with refusal of milk 4%.

RESPIRATORY ALLERGY IN SOUTH AFRICAN CHILDREN

A study has been made of more than 900 infants, children and young persons in the 0-20 year age-group in South Africa

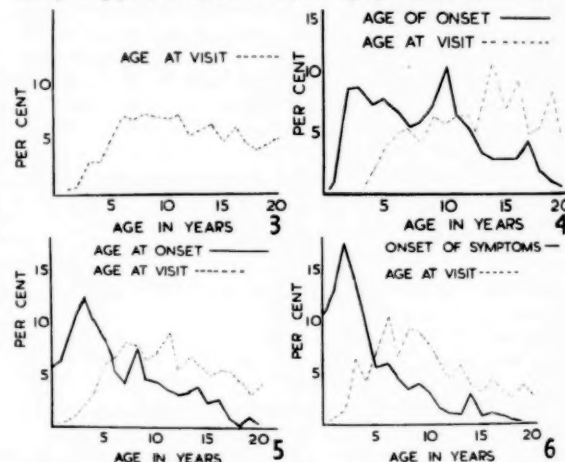


Fig. 3. Respiratory allergy—all forms (939 cases) in the 0-20 year age-group. The ages at which visits were made for allergic investigation are shown in percentages.

Fig. 4. Seasonal hay fever (210 cases) in the 0-20 year age-group. The age of onset of symptoms and the age at which visits were made for allergic investigation are shown in percentages.

Fig. 5. Vasomotor rhinitis (447 cases) in the 0-20 year age-group. Age of onset of symptoms and age at which visits were made for allergic investigation are shown in percentages.

Fig. 6. Bronchial asthma (270 cases) in the 0-20 year age-group. Age of onset of symptoms and age at which visits were made for allergic investigation are shown in percentages.

suffering from some form of respiratory allergy. These patients were in the main referred to the Allergy Department of the Institute for skin testing. For purposes of analysis the patients have been classified into 2 age-groups, viz. (a) 0-5 years and (b) 6-20 years, and the condition of 'respiratory allergy' into (a) *seasonal hay fever (pollinosis)*, (b) *vasomotor rhinitis (nasal and paranasal allergy)*, and (c) *bronchial asthma*. It will be seen from Fig. 3 that the great majority of these young patients was brought for allergic study from the age of 5 years onwards, more especially in the 6-11 year period.

The *sex distribution* of respiratory allergy in the children is shown in Fig. 2. It strikingly confirms findings elsewhere that the incidence of respiratory allergy in boys of the 0-5 year age-group is 2-3 times that in girls. After the age of 5 years the incidence is approximately the same in both sexes.

The *age of onset* of symptoms of respiratory allergy is shown graphically in Fig. 4 (seasonal hay fever), Fig. 5 (vasomotor rhinitis) and Fig. 6 (bronchial asthma.)

Hay Fever. It will be observed from Fig. 4 that the earliest onset of symptoms of hay fever was at 2 years of age and by the age of 12 years 80% of the patients had already developed symptoms. Most of these children were not brought for study until they were 5 years old. It is possible that with proper allergic handling before that age subsequent symptoms might have been prevented.

Vasomotor Rhinitis. A study of Fig. 5 reveals that symptoms of vasomotor rhinitis commenced before the age of 1 year, but the commonest age of onset was in the 2nd to the 4th year of life. By the age of 5 years, 53.1% of the children had already developed symptoms. Allergic study, however, was not commenced in the majority of the cases until the 5th year.

Bronchial Asthma. It will be seen in Fig. 6 that bronchial asthma, like vasomotor rhinitis, became manifest before the age of 1 year and that asthma had already developed in 64.4% of the children by the time they were 4 years old. It is interesting, however, to note that there was a sharp drop in the onset of asthma from the age of 5 years. This group of children was brought for allergic study mainly when 3-11 years old.

THE CONTROL OF CHILDHOOD ALLERGY

The responsibility of the physician to his allergic child patients is a considerable one, not only in the alleviation of immediate symptoms but also in the attempt at prophylaxis against future and possibly more severe symptoms. Every clinical means available should be used to keep an allergic child free from symptoms, especially asthma, for as long a time as possible. The longer he remains free the greater will be his chance of escaping allergic episodes in the future.

As the newborn infant from an allergic family, more especially if there is double parental heritage, is likely to carry with him the allergic tendency, it has been suggested that the prevention of allergic symptoms might commence with the foetus. There is evidence that allergens in the mother's circulation may traverse the placenta and sensitize the child *in utero*. This possibility is not unequivocally established; the occurrence of food allergy has been reported in only one of identical twins. Nevertheless it may be a wise precaution to limit the pregnant mother's intake of highly allergenic foods

such as milk and eggs which will later form an important part of the growing infant's diet.

Foodstuffs are the commonest cause of allergic symptoms in infancy and early childhood. The diet at that time consists largely of a few simple foods and the opportunities for the detection of the causative agents are greater than in the adult. Milk, eggs and cereals as well as fruit and vegetables may prove to be the responsible agents. The physician should ascertain by trial diets which particular food or foods should be eliminated in order to control the symptoms. When it is suspected because of a significant family history that the infant is likely to be allergic it is advisable to introduce new foods into the dietary gradually and in small quantities and to note any reactions. Even simple rejection of a food by a child should be treated with respect. Persistence in coaxing babies or physical or moral persuasion in children to take the food is inadvisable and substitute foods should be provided. Mothers often disguise milk by flavour or colour to induce the child to drink it, with undesirable results in cases of hypersensitivity.

Many of the allergic disturbances in the newborn are due to cow's milk. Grulee and Sandford⁶ have reported that infants fed exclusively with cow's milk develop eczema 7 times more frequently than the exclusively breast-fed. Breast-feeding continued for as long as possible may thus be a prophylactic measure against allergic manifestations later.

If cow's milk is found to be responsible for symptoms it should be removed from the diet until subsequent trials reveal that it is tolerated. The difficulty in milk allergy is often overcome by feeding with evaporated or heated cows milk, when the specific allergenic albumin is denatured. Glaser^{7,8} has shown that soya-bean milk or strained meat soups constitute effective substitutes for cows milk. He postulates a period of a few months of physiological and immunological immaturity in the newborn child when food sensitivities are much more common than in later years. The suggestion is also made that egg should be withheld for at least a year in children with an inherited allergic tendency.

Inhalants play a lesser aetiological role in young infants, but they assume a much greater significance in the older child. Skin testing may have to be carried out to confirm clinical suspicions of allergic sensitivity to pollens, animals or feathers. Children may be affected also by the handling of hairy or furry toys. Sensitivity to house dust may occur as well as to the inhalation of mould spores in damp houses or in coir or other mattresses.

The appropriate measures should of course be taken to avoid the responsible inhalant substance or to be desensitized against it.

Randolph⁹ suggested that in children allergic sensitivity may be a causative factor of fatigue, irritability and behaviour problems. Speer¹⁰ has more recently stated that there may be little other evidence of allergy in children than such forms of what he called 'allergic tension' and 'allergic fatigue'. Allergic tension is manifested as a general hyper-irritability, the patient being nervous or highly-strung, with difficulty in adjustment and given to tears and tantrums. In contrast allergic fatigue is shown in listlessness, sluggishness and tiredness. He finds that food sensitivity is important in these types of cases especially to milk, chocolate, egg, and wheat. He rightly, however, stresses the importance of thorough

preliminary differential diagnosis before an allergic basis is assigned to these conditions.

It not infrequently happens that the administration of vaccine or other immunizing antigen or therapeutic serum precipitates respiratory allergy, especially asthma, in children. It is thus of considerable importance to submit children to the usual immunizing agents as soon as possible, preferably before the age of 1 year.

The great importance of psychological influences in both adult and child allergic conditions is well known and needs no emphasis here. It is, however, often overlooked. Emotional disturbances are all too frequently precipitating factors in respiratory and other allergies and should be corrected whenever possible.

The question of removing children with severe or intractable asthma from their homes to boarding schools or special institutions has frequently been considered and in some countries it has proved a success. Separation from home has often been effective in completely controlling asthma, and in most cases definite improvement has resulted. In institutions the precipitating factors can be more easily observed and domestic emotional complexities avoided.

Ordman¹¹ has shown that there is a group of sufferers from respiratory allergy in South Africa who maintain good allergic health inland but who develop more or less severe vasomotor rhinitis or bronchial asthma at the coast, more especially on the eastern shores of the Union. A study of these cases reveals that symptoms may be aggravated or actually initiated when living at the coast or during a vacation visit there. In these patients pollens, atmospheric moulds and other exogenous allergens were not found to be aetiologically responsible. There is evidence, however, that the precipitation of symptoms at the coast is due to climate factors, more especially the combination of high temperature and high relative humidity in the characteristically narrow diurnal and annual range of each; i.e. continuous warm, damp weather. The high temperature-humidity climate of the coast probably promotes the growth and development of air-borne bacteria and fungi which in turn act upon the local house dust, rendering it more highly allergenic.¹²

There are many children born at the coast or brought there on holiday who fall into this 'climate group' of respiratory allergy. These children suffering from nasal allergy or bronchial asthma lose their symptoms or are greatly improved when taken away from the coast to regions, not necessarily far from the sea, with an inland climate pattern characterized by a wide diurnal and annual range of temperature and relative humidity. Indeed there are schools inland where most of the pupils come from coastal areas in which they have never enjoyed a symptom-free life.

In the therapeutic handling of these children it may be wise, even imperative, to recommend their removal inland. Such advice, which may involve profound domestic disturbance socially and occupationally, would obviously be given only after the deepest consideration following thorough clinical and laboratory studies and psychological investigation to ensure that the child does, in fact, belong to the 'climate group' of allergic patients.

Because of the high allergenicity of coastal house-dust, investigations¹² have been carried out to determine whether desensitization with its extract would be effective. So far,

in a number of patients the results have been successful and this approach appears to be a reasonable and promising one. In view of this it is suggested that 'climate group' child sufferers be given the benefit of coastal house-dust desensitization before more drastic steps are taken.

SUMMARY

1. The manifestations of childhood allergy—respiratory, dermal and gastro-intestinal—are briefly reviewed.

2. An analysis is presented of more than 900 allergic children in South Africa in the 0-20 year age-group:

(a) The great majority were brought for allergic investigation from the age of 5 years.

(b) The incidence of respiratory allergy in boys is 2-3 times that in girls in the 0-5 year age-group but thereafter the incidence is approximately the same in both sexes.

(c) The age of onset of seasonal hay fever is generally at 2 years and by the age of 12 years symptoms have already been established in more than 80% of the patients.

(d) In vasomotor rhinitis, symptoms commence before the age of 1 year and mostly at 2-4 years. More than 50% of the children have already developed symptoms by the 5th year.

(e) In bronchial asthma symptoms begin largely before the age of 1 year and more than 60% developed symptoms by the age of 4 years. Onset of symptoms however dropped sharply from the age of 5 years.

(f) Eczema (and urticaria) was present in nearly 60% of children in the 0-20 year age-group suffering from respiratory allergy.

3. Attention is drawn to the desirability of controlling allergic symptoms in children not only to relieve present suffering but also to prevent the occurrence of possibly more serious symptoms in adult life.

4. The control of childhood allergy is discussed with special reference to the search for and elimination of allergenic foodstuffs, the avoidance of inhalant allergens or specific desensitization against them and the importance of psychological influences.

5. An account is given of children in South Africa in the 'climate group' of respiratory allergy where the symptoms are initiated or aggravated at the coast. The climate factors—high temperature and high relative humidity—are suggested as responsible for the highly allergenic coastal house dust. The handling of these children is discussed and the question of desensitization with coastal house-dust extract is considered.

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THE ERYTHROCYTE SEDIMENTATION RATE IN TYPHOID

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Although the erythrocyte sedimentation rate (ESR) is measured as a routine in medical wards, I cannot find any description of its behaviour in typhoid fever written in English. Even text-books devoted to infectious fevers^{1, 2} do not mention it.

The records of all cases of typhoid admitted to Groote Schuur Hospital from 1950 to early 1957 were examined. In 64 the clinical picture was typical, diagnosis was proven by culture of *Salmonella typhi*, the ESR had been recorded (Table I) and there was no background illness likely to have

TABLE I. ESR IN 64 TYPHOID CASES VERIFIED BY CULTURE OF *S. typhi*

Technique	No. of Cases
Westergren	39
Wintrobe	8
Not specified, but either Westergren or Wintrobe	17
Total Westergren and Wintrobe	64

affected it. The sedimentation rate is always read at 1 hour in this hospital. It is not usually measured in the surgical wards, so that cases presenting with perforation are likely to have been inadequately represented in the sample.

As Groote Schuur is a general hospital, typhoid mostly presents as a problem in early diagnosis. When the diagnosis of typhoid is established patients are transferred to an infectious diseases hospital.

The arithmetic mean ESR was 26 mm. Fig. 1 shows the frequency distribution. Taking 10 mm. in males and 20 mm. in females as the upper limits of normal,* the ESR was normal in 22 cases (34%). It was below 25 mm. in both sexes in a further 20 (31%). In the remaining 22 cases (34%) it was distinctly elevated.

The records were analysed further to try and find why the ESR was low in some cases of typhoid but high in others. There was no correlation between sedimentation rate and the method used, the age, sex, race, haemoglobin, white cell count, height of pyrexia, severity of illness or mortality.

TABLE II. ESR IN 64 TYPHOID CASES VERIFIED BY CULTURE OF *S. typhi*

No. of days from onset of first definite symptoms	Mean ESR	S.D.
Up to 10	19.8	14.5
11 to 35	38.6	26.1

S.E. of difference—6.2.

Difference of means—18.8, which is 3 times the S.E. of difference. $\therefore p=0.003$.

* From the data of Karvonen *et al.*³ on 134 young, healthy subjects the 95% confidence upper normal limit of 1 hour Westergren calculated from mean plus 2 S.D. should be 10 mm. for males and 17 mm. for females. Westergren^{4, 5} has likewise suggested that normal confidence limits up to 10 mm. for males and 15-20 mm. for females be used when considering a group of cases. These limits for the Westergren correspond well with those defined for the Wintrobe method, viz. up to 9 mm. in males and 20 mm. in females (Wintrobe⁶).

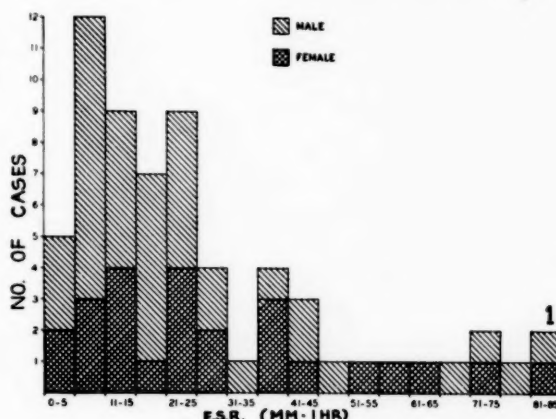


Fig. 1. Frequency distribution of the sedimentation rate in 64 cases of typhoid. (The ESRs of 55 of these are plotted against duration of illness in Fig. 2.)

However, a positive correlation was found with duration of illness. In 55 cases the duration of illness given in the history appeared to be reliable—either the patient was not mentally confused or, if he was, the history had been obtained from a close and observant relative. In this group (Fig. 2) the correlation coefficient between ESR and the duration was plus 0.48. With a standard error of 0.136 this is statistically significant ($p < 0.003$). An alternative way of expressing the relationship is presented in Table II.

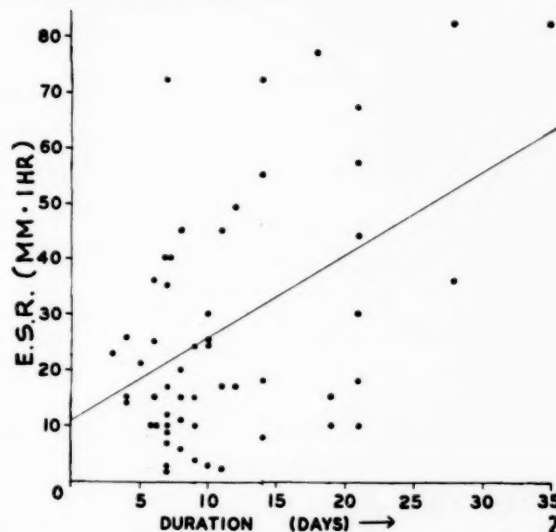


Fig. 2. Partial correlation between ESR and duration of typhoid in 55 cases: scatter diagram and regression line.

DISCUSSION

It has been found that the ESR is usually normal or only slightly increased during the first 10 days of typhoid but thereafter shows a more definite increase. The finding that 1/3rd of cases of typhoid have a normal ESR is surprising, because 'in general the sedimentation rate is increased in all acute general infections' (Wintrobe⁶). Seven types of exceptions to this statement are known:

1. The sedimentation rate may be retarded if measured several hours after withdrawal of blood^{7, 8} or at a temperature below 15 C.⁹

2. Methods using undiluted blood, such as Wintrobe's, are more likely to give false negatives.^{10, 11}

3. Often the ESR is not accelerated if an acute infection is localized, mild or incipient. Thus it is minimally affected by a cold.¹² It is normal in acute appendicitis, but elevated if an appendix abscess forms.¹³

4. Where there is associated cardiac failure,¹⁴ cyanosis or polycythaemia, retardation of the ESR by these conditions may mask the accelerating influence of infections.

5. In some diseases such as tuberculosis where an increased sedimentation is the rule, exceptions have been documented.¹⁵ These illustrate the limited reliability of the test.

6. There are 2 infections which are not mild, brief or localized but are usually associated with a normal ESR: in pertussis¹⁶ the normal sedimentation rate is restricted to the paroxysmal stage, and in infectious hepatitis¹⁷ to the icteric stage.

7. Patients with agammaglobulinaemia have low ESR readings when they develop infections.¹⁸

My present findings in typhoid do not fit well into any of these categories. One way of classifying typhoid might be in group 3 with the qualification that the early delay before the ESR rises is peculiarly prolonged. In pneumonia, for instance, Lesser and Goldberger¹³ found the ESR was over 15 mm./1st hour (Westergren) in all of 60 cases. Some of these are likely to have presented within a day of the onset of symptoms.

The literature was searched and two articles in German found which the present results seem to confirm. Gerecke,¹⁹ in 1926, reported that in 17 cases of typhoid the Westergren ESR was 4-8 mm. in the 1st week. It rose to 14 mm. in the 2nd week and the high value of 30 mm. or more first appeared in the 3rd week.

The delayed rise of the ESR in typhoid ('typhus abdominalis') was analysed in detail by Tamura²⁰ in 1940. He measured the sedimentation rate serially in 41 cases and found that it correlated better with the stage of the disease than the number of days the patient had been ill. Throughout the stages of rising temperature and continuous pyrexia the ESR was normal or only slightly elevated (7-27 mm. Westergren). During the stage of remittent fever a gradual acceleration began in all cases and the maximum ESR (usually 51-85 mm.) was reached on the day when the defervescence was complete. Thereafter it slowly returned to normal over 1-6 or more weeks. The ESR tended to rise earlier in the disease when secondary infections like pneumonia and stomatitis were present but was smaller than usual with the dangerous complications—perforation, bowel haemorrhage or violent brain symptoms.

The importance of Tamura's careful study is that it was made before the introduction of chloramphenicol and therefore on untreated patients going through the natural course of typhoid. This work can no longer be repeated but it appears to have passed unnoticed in the English-speaking medical world. In addition to these two articles,^{19, 20} several others²¹⁻²³ are indexed as dealing with the ESR in typhoid; none of them is accessible to me.

The mechanism of the behaviour of the sedimentation rate in typhoid has not been studied with modern serum-protein techniques. Gerecke¹⁹ ascribed it to the fibrinogen falling at first and rising later than in any other infection.

A practical application of the present finding may be that it provides an additional diagnostic feature for typhoid. In several of the case reports used in my analysis differential diagnoses like miliary tuberculosis and collagen disease had been entertained. A low or moderately raised ESR would argue against either of these and in favour of typhoid. On the other hand a distinctly elevated sedimentation rate has less weight than a leucocytosis in excluding typhoid. Of the 64 patients represented in Fig. 1, only 33 (51.5%) had an ESR of 20 mm. or less, compared with 53 (83%) who had a white-cell count of 10,000 or less. The maximum ESR seen in Tamura's cases was 154 mm. and in my series 82 mm.

However, a higher ESR—141—was seen in one of the probable cases amongst the records I examined; it was not analysed. This patient had had symptoms suggesting typhoid for over a month. The physical findings, rising titre of Widal, and response to chloramphenicol, supported the diagnosis. Failure to confirm it by culture may have been because he was first seen at a late stage of the disease. It is noteworthy that this patient had both the highest ESR and the longest duration of illness of all the case records examined.

SUMMARY

The erythrocyte sedimentation rate is often not elevated in the first 1-2 weeks of typhoid but rises later in the disease. Because of this the ESR may assist in diagnosis.

I am grateful to Prof. J. F. Brock and Prof. F. Forman for advice and permission to publish. Mr. J. N. Darroch of the Mathematics Department, University of Cape Town, advised on statistics and Mrs. J. Smedley drew Fig. 1.

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HALF-YEARLY MEETING OF THE SOUTH AFRICAN MEDICAL AND DENTAL COUNCIL

The South African Medical and Dental Council held its 6-monthly meeting at the Archives Building, Cape Town, on 10-13 March 1958. The President (Prof. S. F. Oosthuizen) was in the chair and 30 members were present, together with the Registrar, Mr. W. Impey and staff. The proceedings occupied 7 morning or afternoon sessions.

The *Financial Statement* for 1957 was submitted on behalf of the Treasurer (Dr. I. R. Vermooten). The income for the year had exceeded the expenditure by £5,138. The income included annual fees £25,301 and registration fees paid by medical practitioners £3,975, dentists £1,125, specialists £1,290, interns £508, medical and dental students £831, auxiliaries £352. The accumulated funds now amounted to £30,126.

REGISTRATION

The Registrar reported on registrations effected during 1957, as follows:

	Registra- tions	Restora- tions	Erasures	On Register
Medical				
Practitioners ..	264	48	158	7,352
Interns ..	254	—	222	423
Dentists ..	75	4	24	1,255
Medical Students ..	350	11	278	1,265
Dental Students ..	52	—	73	197
Auxiliaries ..	75	—	3	946
Specialists (Medical)	87	2	31	1,370
Specialists (Dental)	1	—	—	16

Of the medical practitioners on the register 70.2% had qualified in South Africa (Cape Town 2,308, Witwatersrand 2,246, Pretoria 733), 12.7% in England, 10.3% in Scotland, 3.65% in Ireland, and 3.1% elsewhere.

Of the medical students on the register (including 237 who qualified in June and December 1957) 495 were at the University of the Witwatersrand, 487 at Cape Town, 368 at Pretoria, 115 at Natal, and 37 at Stellenbosch.

The specialists on the register at the end of 1957 were as follows (figures in brackets represent the nett increase since the beginning of the year): Medicine 186 (5), surgery 172 (7), obstetrics and gynaecology 100 (-2), radiology 77 (1), radiology and electro-therapeutics 36 (-1), diagnostic radiology 32 (5), therapeutic radiology 5 (0), pathology 79 (4), paediatrics 68 (3), otorhinolaryngology 67 (-1), psychiatry 66 (0), orthopaedics 66 (7), urology 38 (2), dermatology 33 (1), neurology 28 (2), neuro-surgery 17 (1), venereology 17 (-1), thoracic surgery 17 (2), physical medicine 16 (0), plastic and maxillo-facial surgery 6 (0). Dental specialists: Orthodontia 11 (1), maxillo-facial and oral surgery 5 (0).

The auxiliaries on the register at the end of 1957 were as follows: Physiotherapists 367 (35), masseurs 152 (1), medical technologists 107 (8), health inspectors 51 (0), food inspectors 45 (0), occupational therapists 52 (9), orthopaedic mechanics and surgical-appliance makers 44 (1), chiropodists 34 (0), radiographers 34 (4), diagnostic radiographers 22 (6), speech therapists 21 (1), dietitians 7 (3), psychologists 5 (2), psychometrists 1 (1), orthoptists 3 (1), optometrists 1 (0).

Registration: Decisions taken at present meeting

Limited Reciprocity with the Netherlands. It was resolved to fix 12 as the quota of medical practitioners from the Netherlands registrable in 1959. The number registered in 1957 was 4.

Limited Registration. Registration for 5 years was granted to 4 overseas medical practitioners to engage in missionary practice, and the registration of 3 missionary practitioners was extended for a further period of 5 years.

Limited Registration of Foreign Practitioners in Government Service. To meet the shortage of medical personnel 2 medical practitioners qualified in Germany (one of whom was already registered in the Union as a missionary doctor) were registered to practise in the Government service. These were the first registrations effected under the provisions of regulation 2 (d) made under section 22 (2) of the Act and published in Government notice no. 256 of 1947 as amended by no. 2512 of 1955. The application for these registrations was made by the Secretary for Health in a letter dated 22 November 1957. [This letter, which is published on page 386 of this issue of the *Journal*, sets out the emoluments attaching to medical posts in the public service.]

Visiting Practitioners: 6 medical practitioners visiting the Union had been recommended to the Minister for exemption from registration requirements under section 74 (b)—2 from the UK, 2 from the Netherlands, 1 from Belgium, 1 from Canada.

Elderly Practitioners: 5 medical practitioners were exempted from payment of annual registration fees.

Removal from Register. Erasures at own request: 7 medical practitioners and 3 dentists. For failure to notify change of address: 4 medical practitioners. For failure to pay the annual fee: 62 medical practitioners and 6 dentists.

Specialist Registration. At this meeting 23 applications for the registration of specialists were granted (3 of them under rule 6—previously rule 12), 28 were granted subject to compliance with specific requirements, and 6 were refused. Some 25 other cases were reported in which decisions or advice had been communicated to applicants.

College of Physicians and Surgeons of South Africa. The Council decided to approve the following qualifications as registrable as additional qualifications, and to amend its rules accordingly:

College of Physicians of South Africa, Fellowship [F.C.P. (S.A.)]; Suid-Afrikaanse Kollege vir Interniste, Lidmaatskap [L.K.I. (S.A.)].

College of Surgeons of South Africa, Fellowship [F.C.S. (S.A.)]; Suid-Afrikaanse Kollege van Chirurgie, Lidmaatskap [L.K.C. (S.A.)].

College of Obstetricians and Gynaecologists of South Africa, Fellowship [F.C.O. & G. (S.A.)]; Diploma in Midwifery [Dip. Mid. C.O. & G. (S.A.)]; Suid-Afrikaanse Kollege van Verloskundiges en Ginekoloë, Lidmaatskap [L.K.V. en G. (S.A.)]; Diploma in Verloskundige [Dip. Ver. K.V. en G. (S.A.)].

Recognition of Hospitals or Departments for Specialist Training. Several hospitals or departments in the Union or overseas were recognized as teaching hospitals, teaching hospital equivalents, or approved hospitals.

Recognition of D.P.H. In 1950 an Act was passed in the U.K. making it possible for the General Medical Council (of Great Britain) to register any degree or diploma in public health, etc. granted by an overseas college or university with which reciprocal arrangements for registration exist. At the present meeting the Council decided to draw the attention of the South African universities to this matter so that they may apply to the General Medical Council for recognition of their D.P.H.

COMPLAINTS CONCERNING PRACTITIONERS

Disciplinary. Complaints concerning medical practitioners were considered in 27 cases. In 5 of these it was decided to hold formal enquiries and 22 were disposed of without a formal enquiry. In 2 of the latter, complainants were advised of the procedure under section 80(bis).

Assessment of Accounts. In 5 cases (3 medical practitioners and 2 dentists) assessors were appointed under section 80(bis), and in one case (medical practitioner) the assessors' report was received and noted.

Disciplinary Enquiries. In the following cases the proceedings and findings of formal enquiries were reported to the Council:

1. Dr. J.L.Z.N. Special disciplinary committee. Found guilty of improper conduct, having been convicted and fined (with a suspended sentence of imprisonment and his driver's licence suspended) in the Magistrate's Court for driving a motor car under the influence of intoxicating liquor, and the conviction and sentence having been confirmed on appeal. Penalty: cautioned.

2. Dr. B.R. Special disciplinary committee. Found guilty of canvassing or touting for patients. Penalty: cautioned.

3. Dr. J.S.T. Special disciplinary committee. Found guilty of improper conduct, having been convicted and fined (and his driver's licence endorsed) in the Magistrate's Court for driving a motor car under the influence of intoxicating liquor. Penalty: cautioned.

4. Dr. J.H.S. The Executive Committee held a formal enquiry and came to the following finding: (1) that Dr. J.H.S. has become unfit to purchase, acquire, keep, use, prescribe, order, supply or possess any habit-forming drug, and (2) has been using a habit-forming drug for other than medical purposes. The Committee therefore recommend to the Council that Dr. J.H.S. be prohibited in terms of section 81 (2) (b) (ii) of Act 13 of 1928 as amended from purchasing, acquiring, keeping, using, prescribing, ordering, supplying or possessing any habit-forming drug. *Finding adopted.*

Two other enquiries were postponed *sine die*.

Regulations re Consultants and Specialists. In reply to questions by Dr. M. Shapiro the President stated (1) that the *ad hoc* committee on this subject had met; (2) that the reason why matters concerning the committee were not on the agenda paper of this meeting of the Council was that they were not yet finalized, the committee having referred proposed new regulations to the Council's attorneys for final drafting; and (3) that the *ad hoc* committee would hold a final meeting and report to the Council at its next 6-monthly meeting.

DEATHS ASSOCIATED WITH ANAESTHESIA

In considering communications from the Society of Anaesthetists and the Medical Association on this subject it was mentioned that the training of medical students and interns in anaesthetics had been the subject of consideration by the Council since as long ago as 1950. The Society of Anaesthetists urged one month's compulsory training in anaesthetics for interns or alternatively the compulsory administration of at least 100 anaesthetics under supervision. The Medical Association had submitted a special report on the subject by its 'subcommittee to inquire into medical education and internship.' This report considered certain obstacles that stood in the way of the Society's proposals and mentioned alternative methods of securing additional training in anaesthetics. A letter was also before the Council from the Attorney General, Transvaal, expressing concern at the number of deaths under anaesthesia and supporting the recommendation dealing with compulsory training of interns.

The Medical and Dental Education Committee of the Council reported that after careful consideration the Committee was not in favour of increasing the requirements prescribed for anaesthetics in the minimum medical curriculum, and that the Committee also held the view that it was not feasible to compel hospitals to make the training of interns in anaesthetics compulsory. This recommendation the Executive Committee had considered and recommended the Council to accept, but after debate in the present meeting the Council decided to 'appoint an *ad hoc* committee to investigate the teaching and training in anaesthesia and resuscitation to students and interns'. The members appointed to this committee were Dr. L. I. Braun (convener), Dr. A. Radford, Dr. C. Shapiro, Prof. H. W. Snyman, and the President *ex officio*. The committee was instructed to invite the head of the CSIR anaesthetics research group to submit a memorandum, and was also instructed to complete its investigation and report to the Council by the next meeting.

'FARMING OUT'

The Council's rules concerning 'farming out' came up for consideration on a report from the Executive Committee, who presented a memorandum which the President had prepared at the Committee's request. The memorandum indicated that this was a subject that had engaged the attention of the Council for many years. It is dealt with under the Council's ethical rule no. 26, which, under the title of 'Exploitation', reads: 'Permitting himself to be exploited in a manner detrimental to the public or professional interest.' In 1948 a conference of a number of interested bodies

was convened by the Executive Committee, after which the Council approved the following statement reflecting a definition of 'farming out':

'A practitioner shall not act as a medical or dental officer in any capacity to a society, company, association, hospital or other institution, incorporated or unincorporated, public or private, in which fees for his services are charged against or in respect of patients, unless such fees are handed over to him.'

The Council, while approving of this definition, resolved not to incorporate it in a new ethical rule, but to continue, as in the past, to deal with each case on its merits; and that is still the position.

The President's memorandum went on to say that the Council had since called two conferences to deal with the subject of 'farming out', at which it was resolved that there should be adequate ethical control of medical and dental practice by institutions and organizations employing doctors and dentists, that the existing definition of 'farming out' was inadequate, and that the Council would revise its ethical rules on the subject.

The Executive Committee now recommended the Council to revoke its definition of 'farming out' arrived at in 1948 and to retain ethical rule 26 in its present form, dealing with each case on its merits, and this was agreed.

DURBAN MEDICAL SCHOOL

Prof. I. Gordon moved 'that the Council submit evidence to the Commissioner on the Separate University Education Bill relating to the Government's intention to remove the Faculty of Medicine of the University of Natal from the control of the University of Natal'.

He argued that, although the Durban Medical School had been removed from the ambit of the present Bill, whatever patterns for the higher education of non-Whites became established through the enactment of the Bill would inevitably be applied to the medical school. In two letters dated 20 November and 10 December 1957 the Secretary for Education had advised the Principal of the Natal University that the Government had decided to proceed without delay to take over the medical school and that a committee would be sent to the medical school and take initial steps towards the implementation of this proposal. And on 4 February 1958 the Acting Minister of Education had announced in the House of Assembly that it was the Government's intention to remove the Durban Medical School from the control of the University of Natal and to place it under the control of a Government Department. Professor Gordon went on to say, 'Now is the time, in spite of the formalistic difficulty, for this Council to make its voice heard before the Commission before it is too late'.

At its meeting in September 1957 the Council had adopted the resolution of its *ad hoc* committee, the relevant part of which read, 'The *ad hoc* committee further recommends that, should the Commission desire the Council to make representations, such representations be made on the lines of the resolution* adopted by the Council at its meeting in March 1957.'

Now the Secretary of the Commission has indicated in the clearest manner possible that the Commission does desire the Council to give evidence. He says, 'The Commission would welcome it if your Council would agree to submit evidence'. 'The Council,' said Professor Gordon, 'dare not expose itself in these circumstances to criticism which could justifiably be levelled at it, for having refused to respond to so clear and open an invitation.'

Professor Gordon then went on to argue in detail about the evils that would arise if this medical school for non-Whites were transferred from its association and identity with the University of Natal and were to be made subject to the kind of control that is foreshadowed for institutions subject to the Separate Universities Education Bill. 'I believe, because the training of non-White medical practitioners at the Cape and Witwatersrand medical

* The resolution was as follows: 'That the South African Medical and Dental Council is *inter alia* concerned with the entire pattern of medical education and particularly as far as the acceptance of minimum standards is concerned. It has been brought to the notice of the Council that a new method of control of education is envisaged for the Durban Medical School and that there is a possibility that this may lead to a new pattern which may not be acceptable to the Council for purposes of training of medical practitioners. As a statutory body the Council has grave responsibility in regard to medical education and feels it incumbent on itself to express the sincere hope that, in order to obviate unforeseen difficulties which may arise at some future date when the standards are to be considered and the facilities, the school and examinations inspected, the Council respectfully suggests to the Minister of Education and of Health to take the necessary steps prior to proceeding with legislation now before Parliament to have the implications affecting the South African Medical and Dental Council further investigated and reported upon.'

schools is also threatened by the Bill, that, if the Council does not intervene while the preliminary steps are being taken to remove the Durban Medical School from the University of Natal, we shall see the beginning of the end of effective medical professional training for non-White persons in this country. This will be a tragedy which will have the most profoundly adverse effects upon the health and welfare of non-White peoples. It will also irreparably damage the status of all our primary South African medical qualifications.

Considerable debate followed, chiefly based on the following amendment moved by Dr. M. Shapiro and seconded by Dr. E. H. Cluver which, after Professor Gordon had withdrawn his motion in its favour and a second amendment has been negatived, was carried by the Council:

'That a deputation be sent to the Minister of Health and Education in order to obtain clarification of the statement made by the Acting Minister of Education in the House of Assembly on 4 February 1958 that it was the intention of the Government to transfer the control of the Durban Medical School from the University of Natal to a Department of State. If it is the Government's intention to legislate in this direction under the provisions of the Separate University Education Bill the deputation shall take the necessary steps to give evidence to the Commission.

'Alternatively, if it is the Government's intention to legislate for the transfer of the Durban Medical School to a State Department in some other way, the deputation shall reiterate to the Minister the view of the Council thereon.'

VARIOUS SUBJECTS

General practitioners confining their practice to a particular subject. Dr. M. Shapiro moved the deletion of no. (iii) of the 'general notes' to rule 1 (advertising) of the Council's ethical rules, which is as follows: '(iii) A medical practitioner or dentist in general practice may restrict his practice to a particular subject of medicine or dentistry, but is not permitted to circularize his colleagues or other persons to this effect, since this may create the impression that he is a specialist.' He quoted the case of persons who have spent years on such subjects as child psychology, electro-encephalography, etc. and were not allowed to inform the profession. He criticized the words 'since this may create the impression that he is a specialist', and said that actually it would not. Considerable debate ensued, some members expressing the opinion that the action proposed would bring the profession back to the state in which they were before the specialist regulations came in. Eventually Dr. Shapiro withdrew his motion in favour of the following by Dr. R. V. Bird: 'That the question of permitting certain registered persons to circularize their colleagues, e.g. persons with particular trainings in a specified branch of medicine or surgery, be referred to the Executive Committee for consideration and, if necessary, reference to any appropriate Committee of the Council'—carried.

Functions of Medical Advisers of Pharmaceutical Companies. The Executive Committee reported that they had interviewed representatives of the Medical Association on this matter, and now submitted resolutions to the Council. These resolutions, which were adopted by the Council, are as follows:

'1. A registered medical man employed by a pharmaceutical house must never offer advice about, or suggest the use of, his Company's products to the lay public, unless he is a part-time medical officer or G.P., in which case he may prescribe in the ordinary way.

'2. He must never seek to initiate the direct promotion by word of mouth (or written or printed word over his signature), of any pharmaceutical product. However, he may individually and in response to queries from the medical profession, suggest the use of a product, or a modification in the manner of use of such a product.

'3. He must not use his skill and knowledge for the direct purpose of promoting or increasing the sale of any product. For example, he may compile, or initiate, or supervise the compilation of literature descriptive of one of his Company's products as this does not involve the use of his registration for advertising but only his knowledge as an unidentified person. Again he may not contribute articles to medical journals unless he declares his vested interest by saying (e.g.) Dr. A. B. Smith, X.Y.Z., Medical Director, The Alpha Manufacturing Company.'

'Medical Centre'. On considering a suggestion from the Medical Association that such names should not be given to buildings belonging to a limited number of doctors, where the medical pro-

fession generally is excluded (e.g., where a limited number of practitioners invest money in a building, the occupancy of which is limited to themselves), the Council concluded that it was not practicable to put the suggestion into practice. (The Medical Association saw no objection to such names for buildings where all members of the profession have equal opportunity to become tenants.)

Specialist as Hospital Superintendent. It was decided to inform a specialist who submitted an inquiry on the subject that a specialist was not precluded from acting as superintendent of a hospital; he was, however, subject to ethical rule no. 13 (entitled 'consultants and specialists').

Employment of Unregistered Nurses. It was decided to inform a dentist who submitted an inquiry concerning the performance of certain surgical procedures under anaesthetic in his consulting rooms, that there is no law or regulation which would require him to make use of the services of registered nurses only, though doubtless it would be in the interests of the patients to do so.

Consulting Rooms in a Hotel. There is no objection to a medical practitioner having consulting rooms in a hotel, provided he does not contravene any ethical rule of the Council.

Doctor working as a Clerk. There is no objection to a practising doctor working part-time as a clerk in a legal office.

Doctor holding Religious Services. There is no objection to a doctor holding religious services.

Refusal of Doctor to attend a Patient

Mr. W. H. Rood moved that it be laid down as the policy of the Council for the guidance of the medical profession and the public:

'That a medical practitioner is free to decide whomever he will serve; a practitioner may, however, be required to justify his actions should unnecessary suffering or death result from his refusal to attend a patient. Unless there are very special reasons for not doing so, a medical practitioner should himself examine all persons, but particularly children, who attend at his consulting rooms or residence and have travelled some considerable distance for the purpose, thereby indicating their *bona fides* and anxiety; alternatively, he should satisfy himself that such examination can be undertaken without delay by another practitioner, who is available.'

In submitting this proposal Mr. Rood referred to two cases in which doctors declined to attend particular patients, and mentioned that complaints on the subject had been dealt with by the Council without holding a formal enquiry. Considerable debate ensued, in which several speakers maintained that the existing rules of the Council were adequate and that doctors must be allowed to use their own discretion in this matter. Dr. J. N. W. Loubser held that it was unnecessary and undesirable to lay down policies: each case should be decided on its merits. Mrs. Searle, opposing the motion, spoke of the good work done by doctors—often at sacrifice to themselves. Dr. J. Black pointed out that the first half of the motion exactly reflected the Council's present policy and the second half he appealed to the mover to withdraw. Dr. R. V. Bird said that the standard of medical practice in South Africa was as high as anywhere in the world. In 10 years only 5 complaints had been received—amongst 8,000 practitioners—which could be linked with this motion. The motion was lost.

Election of Committees of Council

The following committees were constituted:

Executive Committee. *Ex officio:* President and Vice-President. *Co-opted:* Dr. J. J. du P. le Roux. *Elected:* Dr. J. N. W. Loubser, Dr. L. I. Braun, Dr. A. Bloom, Dr. J. Black, Dr. R. L. Impey, Prof. J. Breyer, Mr. W. H. Rood, Miss C. A. Nothard.

Medical and Dental Education Committee. *Ex officio:* President, Prof. G. A. Elliott, Prof. I. Gordon, Prof. H. W. Snyman, Dr. B. Bromilow-Downing, Prof. F. D. du T. van Zyl. *Elected:* Dr. Impey, Dr. E. H. Cluver. *Ex officio:* Prof. H. H. Louw and Prof. J. Staz. *Elected:* Dr. R. Hofmeyr.

Specialists Committee (Medical). *Ex officio:* President. *Elected:* Prof. van Zyl, Prof. Elliott, Prof. Snyman, Dr. Bloom, Dr. Braun, Dr. A. Radford.

Specialists Committee (Dental). *Ex officio:* President. *Elected:* Dr. R. V. Bird, Prof. Louw, Dr. Hofmeyr.

Dental Committee. *Ex officio:* President. *Elected:* Dr. Bird, Prof. Breyer, Dr. J. A. Stegmann.

Auxiliaries Committee. *Ex officio:* President. *Elected:* Dr. Cluver, Dr. C. Shapiro, Dr. M. Shapiro, Dr. Radford, Dr. Bird.

Conjoint Committee (with S.A. Pharmacy Board). *Ex officio:* President. *Elected:* Prof. Breyer, Dr. Cluver.

EMOLUMENTS OF MEDICAL POSTS IN THE PUBLIC SERVICE

The following letter was addressed to the South African Medical and Dental Council on 22 November 1957 by Dr. J. J. du P. le Roux, Secretary for Public Health:

LIMITED REGISTRATION OF FOREIGN MEDICAL PRACTITIONERS

At the meeting of the South African Medical and Dental Council held in Cape Town during September 1955, I pleaded the Minister's request for an amendment to your regulations which would permit the registration of persons holding certain foreign degrees while they were in the service of the Government in order to meet the acute shortage of medical personnel in the public service.

2. During the debate it was questioned whether the shortage was not attributable to the salaries and conditions of service in the public service, and I undertook to delay recruitment overseas until this aspect had received further consideration.

3. With partial consolidation of Cost of Living Allowance the salary structure had previously been established at £1,080 × 60—£1,260, £1,380, £1,500, £1,620, £1,740, £1,860, £1,980, £2,100, £2,220, £2,400 and £2,700, with Cost of Living Allowance of £234 for married men.

4. This in itself was not considered unrealistic as the Provincial Administrations since then introduced the same salary structure in their respective hospital services. It was, however, felt that entrants to the service with some experience should be better remunerated. It was therefore decided that those with at least 2 years' previous experience after registration and those who completed, after appointment, 2 years' experience after date of registration should be remunerated at £1,380 per annum. In other words a young married man 2 years after completion of his internship is remunerated at the rate of £1,614 per annum.

5. The structure of the service itself has also been altered materially; while 53.6% of the posts are in the 2 entry grades, 32.9% are in the 4 middle grades and no less than 13.9% are in the grades of £1,980 and above.

6. The prospects of attaining a basic salary of say £1,740 per annum have therefore improved considerably. The cash values of privileges attached to such a salary are set out below so as to make a comparison between the prospects in the Public Service with those of general practice possible.

Basic salary	£1,740	per annum
Cost of living allowance	234	"
38 days' leave	205	"
Vacation-saving bonus	87	"
	<hr/> £2,266	

7. In addition to the above, there are the privileges of sick leave and study leave. The benefits of sick leave, particularly during a prolonged illness, are inestimable.

8. Study leave on the other hand, although a privilege and not a right, is never refused to a diligent officer after 5 years of service. This amounts to a day on full pay for every day of leave contributed by the officer. It is thus possible for an officer who has accumulated 30 days out of his 38 days of leave every year to proceed, after 5 years, on a full academic year (10 months) of study on full pay.

9. If the value of this privilege is added, the possible cash value of a post with basic salary £1,740 can therefore amount to £2,471.

10. In addition, the Government, through its pension funds, makes adequate provision for the security of its officers. The pensionable age has been increased to 65 years and it is therefore probable that any man joining the service now will end his service career in one of the senior posts and retire with a pension of £1,000 per annum and in addition receive a gratuity of between £3,000 and £4,000. Should an officer die before reaching the retiring age his widow is entitled to the accrued gratuity as well as his pension for 5 years payable in a lump sum—this is in addition to her widow's pension.

11. It may, however, be of greater interest to a young married man at the start of his career to know that, should he die, the service provides ample security for his dependents. The full benefits of widow's pension accrue on the day an officer is placed on the permanent staff and makes his first contribution of 2% of basic salary to the fund. To illustrate the security to dependents which this fund ensures I quote the actual case of a young medical officer who died recently, with less than 5 years of service and still on the £1,380 grade. His widow receives a pension of £302 per annum for her lifetime and in addition a temporary allowance of £147 per annum for a minor child, i.e. £37 8s. 4d. per month.

12. I submit that salaries are adequate, that service conditions and privileges are realistic and attractive, and that the prospects in the Public Service compare favourably with those in general practice. Under these circumstances I can only conclude that the small response to recent advertisements calling for applications to the many vacancies in the Department is due to a shortage of medical practitioners in the country.

13. I have kept faith with the S.A. Medical and Dental Council in my undertaking not to advertise vacancies overseas before now, but the stage has been reached when I can no longer call upon the medical officers already in the service for a special effort on their part to maintain our essential services, neither can I delay still longer the development of equally necessary services, and I am therefore forced by circumstances to ask the Council for the registration, in terms of the regulations framed under Section 22 (2) of Act. No. 13 of 1928, published in Government Notice No. 256 of 7 February 1947, as amended, by Government Notice No. 2512 of 23 December 1955, of two German born medical practitioners holding German degrees.

PUBLIC HEALTH WORK IN AFRICA: TEN YEARS OF PROGRESS*

F. J. C. CAMBOURNAC

Director of WHO in Africa

This year, World Health Day coincides with the tenth Anniversary of WHO. I should like to take this opportunity to pay tribute to the admirable work of the health services everywhere in Africa, and to recall briefly the astounding progress achieved over the past decade.

Everywhere in Africa disease is regressing.

Yellow Fever has practically ceased to present a menace. Banned from the cities and from many rural areas thanks to mass vaccination, the disease is nowadays confined to certain forest and bush areas, where certain animal species constitute an inextinguishable virus reservoir. Protection today requires little more than a few elementary precautions.

*A statement of World Health Day 7 April 1958.

The fight against *smallpox* has given rise to some of the greatest victories of man over the opposing forces of nature. If *smallpox* has not been eliminated from the continent, it no longer creates havoc among entire populations.

Sleeping sickness and *animal trypanosomiasis* have been brought under control in most inhabited territories. In certain regions, however, the only method still remains to avoid infected areas. Almost everywhere the incidence of the disease has been reduced to a negligible level. The era of great epidemics is past, thanks to effective and unrelenting control. Nevertheless, in spite of all efforts, animal trypanosomiasis still presents many a technical and complex problem which the governments endeavour to solve, particularly through measures aimed at eradication of the tse-tse fly.

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Thanks also to the introduction of such products as residual insecticides and antimalaria drugs, penicillin and sulfones, it has been possible to achieve a substantial reduction in the prevalence of such scourges as malaria, venereal diseases, treponematoses and leprosy.

Since the last world war, 5 million out of 20 million Africans suffering from yaws have already been cured. It can be expected that the hideous disease may disappear from the face of Africa within a generation.

We shall perhaps need more time to get rid of malaria, in spite of the world-wide eradication campaign now under way, and which is expected to last about ten years. In Africa, conditions make control technically much more difficult, and therefore much more expensive, than in most other parts of the globe. However, eradication has already been practically achieved in some areas in the south-east of the continent. As soon as the result of studies and surveys now under way are known, it will be possible to develop malaria eradication activities in other areas of Africa, for the successful outcome of eradication operations in not too remote a future depends largely upon better knowledge about the application of insecticides and drugs.

Leprosy also calls for perseverance and patience. Everywhere in Africa efforts are made to control the disease. The considerable expansion of campaigns in recent years, and the enthusiastic support of the population, leads us to expect that a very high proportion of leprosy patients will receive treatment in the near future.

The discovery of new drugs against tuberculosis may one day allow the launching of a mass attack against the disease. Studies

now under way in this field show that more Africans are affected by tuberculosis than was at one time thought.

Less known of the public, other diseases such as bilharzia and onchocerciasis are still difficult to combat for, if we know how to prevent them, science has not yet provided a miracle drug capable of bringing cure in all cases and enabling the launching of mass campaigns. Nevertheless, vast areas where onchocerciasis had driven away the population have been reclaimed, thanks to the eradication of the vector gnat.

Progress in the treatment of disease is not enough. Great progress in disease prevention and better health has been achieved in the various fields which together form the foundations on which to rest the organization and administration of public health in Africa: viz. maternal and child welfare, nursing, nutrition, environmental sanitation, and health education of the public.

Since its establishment in Africa some 5 years ago, the role of the World Health Organization has consisted, to the extent of its limited means, in assisting the governments in their never-ending task of solving new problems as they arise from the rapid evolution which is so characteristic of this continent. More and more, these problems extend beyond the limits of national boundaries. Our role therefore is a co-ordinating one, to ensure the greatest possible effectiveness of efforts undertaken everywhere in Africa.

The fight against disease and the struggle for better health, within the more general framework of a raising of standards of living of the populations, is a key feature of Africa today. The World Health Organization is proud to play its part in so formidable a task.

A MEDICAL LUNCHEON CLUB

The Medical Luncheon Club of Johannesburg, which held its inaugural luncheon meeting on 11 February at the Park Hotel, Plein Street, Johannesburg, has been established for the holding of 'an informal monthly luncheon meeting of medical men and women at which prominent speakers from all walks of life will address members on matters of topical interest'. The inaugural committee consists of Dr. A. D. Bensusan (chairman), Dr. B. Serebro (vice-chairman), Dr. P. D. Seaward (treasurer), Dr. E. Alan Price (hon. secretary), Mr. E. Abro (hon. organizing secretary), and Dr. R. Sasto, Dr. D. Haynes and Mr. J. C. Allan. The Mayor of Johannesburg (Councillor T. Glyn Morris) is Patron of the Club. Enquiries for membership should be directed to the Hon. Secretary, P.O. Box 9612, Johannesburg.

At the first meeting the main speaker was Prof. W. A. Lloyd, whose subject was 'Professional Education for the Forseeable Future'. The Mayor of Johannesburg proposed the health of the Club. In his reply to the welcome that was extended to him the Mayor said:

With you I regard this First Meeting of the Medical Luncheon Club as an occasion of considerable significance. The Mayoress and I are delighted to be here today. With you, I welcome the formation of this Club most warmly, and I offer you not only our own congratulations and good wishes, but also those of my Council, many members of which, I am sure, will be most interested to learn of your existence.

Ever since the beginning of community life, people of intelligence have been drawn together for discussion and for the interchange of knowledge and of thought from time to time. This type of club is really a development of that idea, in that it provides a forum for the thought of one individual, the speaker, and a spring-board, perhaps, for the thought of those who listen to him.

Although it has become a modern platitude, it remains a sobering, almost frightening truism to say that the progress of man's invention, especially in the past few decades, is way ahead of the progress of his mind. We can hurl ourselves through the air at 1,000 m.p.h. and more; we can send our voices around the

world at the speed of light; we have found out how to conquer many a disease and how to save and lengthen lives; we have discovered and are harnessing sources of fantastic energy—so vast that we can destroy humanity almost by the simple pressing of a dozen buttons here and there; now Man is conquering Space.

How much more do we really know now than the classical philosophers knew, or at least suspected, two thousand years ago; and knowing it, to what use do we put our knowledge? Aristotle, Plato, Socrates went very far in their amazing contemplation of the Universe. Has the important thing, the mind of man, developed really very much since then? Perhaps it is possible that man does treat his fellow man with greater justice, tolerance and sympathy—but the level still is scandalously low. Could the butchery of Christians in the Roman times compare remotely with the callous slaughter of Jews and others under recent dictatorial regimes? If we exclaim at the thrill of the sadist 2,000 years ago to see the 'sport' of men being torn apart by lions, should we not wonder why it is difficult to keep spectators away from the most dangerous corners in the murderous motor-racing circuits of today? Should we not wonder why the standard of the public mind is still so low that the Press—sometimes the only medium of enlightenment of masses in these momentous times—in order to improve, or even to maintain, its sales, must publish details of murders and sexual crimes.

Development in science has been tremendous; knowledge and its application leap ahead with every day and hour. What of man's mind?

Suffice to say now with the time at my disposal that any club, society or body formed, where people come to hear expression of the thoughts of others, pondering upon them, and thinking seriously themselves in consequence, deserves encouragement and invites support. I hope your club will grow and blossom on these lines, and that you, its members, trained as you are in your profession in both inductive and deductive thought, will all derive much benefit from it, passing on your gain to others.

I thank you for inviting me to be associated with you in my Mayoral year; and again I wish you well.

SELECT LIST OF RECENT ACCESSIONS TO THE MEDICAL LIBRARY, OBSERVATORY, CAPE

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NEW PREPARATIONS AND APPLIANCES : NUWE PREPARATE EN TOESTELLE

DISTAQUAINE V ELIXIR FORTE

British Drug Houses announce Distaquaine V Elixir Forte, which contains 240 mg. of phenoxymethylpenicillin to the teaspoon (3.5 ml.) and supply the following information:

Since the successful introduction in 1956 of Distaquaine V Tablets (phenoxymethylpenicillin, penicillin V) laboratory evidence and clinical experience have emphatically confirmed that this oral penicillin, unlike the previously available preparations, is acid-stable and not affected by gastric acidity, with a more dependable absorption and greater potency, dose for dose, than other oral preparations. Thus reliable oral therapy has consistently been achieved.

Hitherto the most important limiting factor to the use of oral penicillin has been the poor relative absorption, varying from one patient to another, and resulting in unreliable therapeutic levels. Much research work has been carried out to determine whether the very high blood concentrations of penicillin necessary for the treatment of such conditions as subacute bacterial endocarditis could be readily obtained with phenoxymethylpenicillin, and the results now abundantly confirm that these high blood levels can be adequately and reliably produced by massive doses of Distaquaine V. Moreover, the blood levels obtained are in a linear relation to the dosage employed.

To facilitate the prescription of large doses of Distaquaine V, British Drug Houses have enlarged their range to include Distaquaine V Elixir Forte, a preparation especially suitable for children. The Distaquaine V series will now consist of the following:

Distaquaine V Elixir Forte, containing 240 mg. in 3.5 ml. 12 doses.

Distaquaine V Elixir, 2 fl. oz.

Distaquaine V Tablets, 60 mg. Carton* of 12, bottle of 30, bottle of 200.

Distaquaine V Tablets, 120 mg. Carton* of 12, bottle of 100.
Distaquaine V Tablets, 240 mg. Carton* of 12, bottle of 100.
Distaquaine V Sulpha Tablets. Carton* of 12, bottle of 30, bottle of 200.

* Each tablet enclosed in gold aluminium foil.

* * *

ARCOFAC

Petersen Ltd., Cape Town and Johannesburg, announce the introduction of Arcofac (Armour Cholesterol-lowering Factor), a concentrated, nutritional supplement for the prophylactic treatment of atherosclerosis, manufactured by the Armour Laboratories, Kankakee, Illinois, America; and supply the following statement:

Each tablespoonful (15 c.c.) of Arcofac contains 6.8 g. of linoleic acid*, 0.6 mg. of vitamin B6, and 11.5 mg. of mixed tocopherols (vitamin E), together with sodium benzoate as preservative. The linoleic acid is derived from safflower oil, which contains the highest concentration of unsaturated fatty acids of any commercially available vegetable oil.

Atherosclerosis as productive of coronary disease is high on the list of causes of death. It has been demonstrated in early life and in young adults as well as in older persons, and is not an inevitable accompaniment of growing old as some have believed. Although the exact role of cholesterol in the development of atherosclerosis is yet unknown, enough evidence has been accumulated to leave little doubt that cholesterol is an important factor. Investigators agree that it is highly important to reduce high cholesterol blood levels. Equally important may be the prevention of high cholesterol blood levels.

Rationale of Therapy. Blood cholesterol levels can be controlled by:

(1) severe dietary restrictions, i.e. drastic reduction of the intake

of foods containing cholesterol and highly saturated fatty acids, which, however, may be difficult to maintain because the diet becomes unpalatable and monotonous, and even nutritionally deficient; and (2) *major change of diet*. It has been confirmed that vegetable oils rich in unsaturated fatty acids predictably reduce elevated blood-cholesterol levels. Changing the diet so that it includes adequate amounts of unsaturated fatty acids will lower high serum-cholesterol levels.

Arcofac is introduced as an answer to this problem. It is a palatable concentrated dietary supplement of unsaturated fatty acids which will permit the patient to stay on a normal balanced diet. In developing this supplement the Armour organization has worked for years, including 7 years of clinical evaluation.

Arcofac contains:

(a) A high concentration of linoleic acid—an unsaturated fatty acid that lowers blood cholesterol.

(b) Vitamin B6—necessary for the conversion in the body of linoleic acid to the primary essential fatty acid, arachidonic acid.

(c) Vitamin E (tocopherols)—powerful anti-oxidants, protecting linoleic acid against loss of potency.

Dosage

(a) *Prophylactic*. If the blood cholesterol is within normal limits but the individual is likely to develop hypercholesterolaemia, give 1-2 tablespoonfuls of Arcofac once daily. Check blood-cholesterol levels every 2-6 months.

(b) *Therapeutic*. If hypercholesterolaemia is present, give 2-8 tablespoonfuls daily. It is advisable to begin with high dosage in order to bring about a more rapid reduction of cholesterol levels. Then reduce dosage to maintenance level (usually accomplished in 2-4 weeks). Blood-cholesterol levels may be checked every 2-4 weeks until the maintenance level is established.

Presentation: Bottles of 12 oz.

* * *

TRYPURE

Evans Medical Supplies announce the introduction of two improved forms of Trypure, and supply the following information:

Trypure Stabilized is pure crystalline trypsin stabilized by the addition of an inert calcium salt. It is supplied in vials of 50 mg. with 15 ml. of sterile saline solution as a diluent. Solutions of Trypure Stabilized will keep for 48 hours at normal temperature or for 3 months in a refrigerator.

Trypure Dispersible contains 50 mg. of Trypure Stabilized in 2 g. of an inert water-soluble powder. It is supplied in glass vials with a sprinkler top. 2 g. of powder is sufficient for 100-200 sq. cm. of wound surface.

Trypure is a quick-acting and dependable aid to therapy in all kinds of purulent and necrotic processes. It loosens or resolves the necrotic tissue in wounds and cavities; it liquefies purulent, viscid accumulations and clotted blood; it reduces the viscosity of ropy bronchial secretions. By removing dead tissue it facilitates and accelerates normal wound healing; it does not attack healthy tissue, which is protected by trypsin inhibitors.

The new stable forms of Trypure permit less frequent applications than is possible with non-stabilized trypsin. In most cases one application per day is sufficient.

Trypure possesses a much higher proteolytic activity than other enzyme preparations. Its purity obviates the risk of allergic or toxic side effects and no antigenic or sensitization reactions have been reported.

More detailed information is available from Evans Medical Supplies, P.O. Box 6607, Johannesburg.

PASSING EVENTS : IN DIE VERBYGAAN

Dr. S. Rachman, Breyten, Transvaal, has retired after many years of practice at Breyten.

* * *

Dr. and Mrs. Lionel Stein of Cape Town have left for a three months' visit to England and the Continent.

ANDROGYNON INJECTION

Scherag (Pty.) Ltd. introduce Androgynon injection and supply the following information:

Androgynon injection is a new preparation by Schering Corporation, USA, combining androgenic and oestrogenic steroids in a ratio suitable for the treatment of male patients biologically over 50 years old. The addition of a small amount of oestrogen to testosterone conforms to biological principles and a more complete replacement therapy is achieved.

Androgynon injection can also be successfully used in the pre-menopausal syndromes, where usually a condition of a relative hyperoestrinism is present. The proportion of 20 mg. of testosterone propionate to 1 mg. of oestradiol benzoate is sufficient to produce a marked obliteration of the endometrium and prevention of endometrial bleeding.

This preparation is also indicated in cachexic condition in geriatrics and for the suppression of lactation.

Androgynon injection is available as 10 c.c. multiple-dose vial and box of 3 ampoules. Each c.c. contains 1 mg. of oestradiol benzoate U.S.P. and 20 mg. of testosterone propionate U.S.P. Distributors: Scherag (Pty.) Ltd., Johannesburg.

* * *

LIBRATAR : (UNION CHIMIQUE BELGE, S.A.)

Scherag (Pty.) Ltd. introduce Libratar and supply the following information:

Libratar is a completely new approach to peptic ulcer therapy. There are many drugs claimed to be effective against peptic ulceration, but conventional symptomatic treatment has seldom been entirely satisfactory.

Experimental results with Libratar (a chemically new drug—chlorbenzoxymethamine) a product of Union Chimique Belge, seems to indicate that this drug influences the healing process through the higher centres. Its effects upon the ulcerative disease is without material anticholinergic effect. It has obvious advantages—effective without inhibiting gastric secretion, potent without untoward side-effects, non-toxic and well tolerated.

Clinically it has been shown to be effective, not only in gastric and duodenal ulceration, but also in oesophageal ulcers. Pain usually disappears within 3-5 days and some cases have shown complete radiological healing between the 3rd and 5th week. Usual dose during acute attacks is 1 tablet after each meal and 2 before retiring.

Libratar is available as 30 mg. tablets in bottles of 30 and 100. Distributors: Scherag (Pty.) Ltd., Johannesburg.

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VESPARAX

Scherag (Pty.) Ltd. introduce Vesparax and supply the following information:

Barbituric sleep, although effective, has not solved the problem of after-effects and the lack of emotional relaxation during the induced sleep. Vesparax, a product of Union Chimique Belge, induces sleep which very much resembles natural sleep.

Vesparax contains Secobarbital (powerful, quick-acting barbiturate), Brallobarbitol (progressively-acting barbiturate with medium-length duration) and Aterax (effective tranquillizer which inhibits the tendency to dreams and nightmares.) The combination of the two barbiturates and Aterax in Vesparax interrupts the psychoaffective stimuli which often causes insomnia, and brings about a psychic calm which barbiturates alone are unable to achieve.

Dosage: Patients accustomed to taking barbiturates—1 full tablet before retiring. Patients who usually do without soporifics— $\frac{1}{2}$ tablet before retiring.

Packing: Tube of 10 tablets and bottle of 100 tablets.

Distributors: Scherag (Pty.) Ltd., Johannesburg.

* * *

Research Forum. The next meeting of Research Forum, University of Cape Town, will be held on Tuesday 15 April at 12 noon,

in the A-Floor Lecture Theatre, Groote Schuur Hospital, Cape Town. Speakers, Dr. J. D. L. Hansen and Dr. H. Schendel. Subject, 'Nitrogen Metabolism Studies in Kwashiorkor'.

Dr. B. A. Bradlow, of Johannesburg, is leaving for England and the Continent for three months in order to undertake postgraduate study. Dr. Bradlow intends visiting medical clinics in England and Switzerland. He will be accompanied by Mrs. Bradlow.

Workmen's Rehabilitation Centre. The next clinical meeting will be held on Tuesday 8 April at 5.15 p.m. in the Gymnasium of the Workmen's Rehabilitation Centre, corner of Esselen and King George Streets, Hospital Hill, Johannesburg. Speaker, Mr. A. D. Muskat, M.Ch. Subject, A Case of post-Traumatic Sequelae of Head Injury with bizarre Neurological Symptoms. All doctors are cordially invited to attend and join in the discussion.

South African Paediatric Association. The next meeting of the Cape Town Sub-group of this Association will be held on Tuesday 8 April 1958 in the Lecture Theatre, Red Cross War Memorial Children's Hospital, Rondebosch, Cape, at 8.15 p.m. Mr. A. Katz, F.R.C.S., will speak on 'Chronic Constipation with Special Reference to Hirschsprung's Disease'.

The IX International Congress of Paediatrics will be held in Montreal, Canada, on 19-25 July 1959 under the auspices of the International Paediatric Association at the invitation of the Government of Canada and the Canadian Paediatric Society. The scientific programme has been planned to embrace the problems of child care in their broadest sense, and will include plenary sessions, panel discussions, original communications and scientific exhibits. Simultaneous interpretation will be employed for all plenary sessions. Official languages will be English, French and Spanish. A varied programme of social events will be offered. Canada's bilingual metropolis is one of the cosmopolitan centres of North America and has many scientific, artistic, cultural and educational attractions, including two universities and two modern Children's Hospitals. The Laurentian Mountains and the St. Lawrence Seaway are both close to this charming city. The preliminary programme and registration forms will be distributed in a few months time by the regional offices of the American Express Company.

Chaim Weizmann Memorial Fellowship Academic year 1958-59. The Weizmann Memorial Foundation will shortly elect two Fellows to spend a year in research in the natural sciences at the Weizmann Institute of Science, Rehovoth, Israel, beginning in the autumn of 1958. These fellowships are intended for young scientists with several years of post-doctoral research experience. It is expected that the candidate will have worked in a field close to one of the subjects under investigation at the Weizmann Institute, so that he will be able to join an existing research team.

The Weizmann Institute comprises the following departments

and sections; Applied Mathematics, Nuclear Physics, Electronics, X-ray Crystallography, Isotopes, Polymers, Biophysics, Organic Chemistry, Experimental Biology, Photochemistry and Spectroscopy, Infra-red Spectroscopy, Microbiology.

The stipend, including fare, for a single Fellow coming from Europe is \$3,500 (\$4,000 from the U.S. or the Far East); for a married Fellow bringing his family from Europe, \$4,500 (\$5,500 from the U.S. or the Far East). The Institute endeavours to help find suitable accommodation. Applications should reach the Academic Secretary, The Weizmann Institute of Science, Rehovoth, Israel, not later than 10 April. Further information may be obtained from the Institute.

Unie van Suid-Afrika. Departement van Gesondheid. Aangifte van gedugte epidemiese siektes en poliomiëlitis in die Unie gedurende die tydperk 14-20 Maart 1958.

Pes, Pökkies, Tifuskoors.

Poliomiëlitis					
	Bl.	Nat.	Kl.	As.	Totaal
Transvaal ..	2	3	1	—	6
Kaaprovinsie ..	2	3	2	—	7
Oranje-Vrystaat ..	—	2	—	—	2
Natal ..	2	—	—	—	2
Totaal ..	6	8	3	—	17

Local Authorities				Eur.	Non-Eur.
Transvaal					
Brits District	..	..	R		1
Brits Municipality	..	..	U		1
Groot Marico District	..	..	R		1
Pietersburg Municipality	..	..	U		1
Potchefstroom District	..	..	R	1	
Pretoria Municipality	..	..	U	1	

Cape Province:

Cape Divisional Council ..	U		1
Kokstad Municipality ..	U	1	
Molteno Municipality ..	U	1	
Piketberg Divisional Council ..	R		1
Port Elizabeth Municipality ..	U		1
Steynsburg Divisional Council ..	R		1
Uitenhage Divisional Council ..	R		1

Orange Free State:

Bloemfontein Municipality ..	U		1
Kroonstad District ..	R		1

Natal:

Amazintoti Borough ..	U	1
Durban Borough ..	U	1

U=Urban. R=Rural.

REVIEWS OF BOOKS : BOEKRESENSIES

SURGICAL TEXTBOOK FOR MEDICAL AUXILIARIES

Surgery: A Guide to Surgical Diagnosis and Treatment including Tropical Surgery. The Oxford Handbooks for Medical Auxiliaries. By W. G. Kerr, M.B., F.R.C.S. (Ed.) Pp. viii + 410. 25s. London: Oxford University Press. 1957.

Contents: Part I. General Surgery. 1. Introduction. 2. Wounds and Injuries of Soft Tissues—Skin, Subcutaneous Tissue and Muscle. 3. Injuries of Soft Tissues—Tendons, Nerves and Blood-vessels. 4. Shock. 5. Burns. 6. Poisonous Bites and Stings. 7. Injuries to Bones and Joints. 8. Infection—General Principles. 9. Acute Infection. 10. Chronic Infection. 11. Tumours. 12. Degenerative and Endocrine Disorders. Part II. Regional Surgery—The Limbs. 13. Injuries and Infections of the Hand. 14. Injuries of the Upper Limb. 15. Nerve and other Lesions in the Upper Limb. 16. Injuries of the Lower Limb. 17. Arthritis in Lower Limb Joints. 18. Other Lesions of the Lower Limb. Part III. Regional Surgery—Spine, Head and Neck. 19. Injuries of the Spine. 20. Diseases of the Spine. 21. Injuries of the Head. 22. The Cheeks, Mouth, Nose and Throat. 23. The Neck. Part IV. Regional Surgery—Thorax and Abdomen. 24. The Breast. 25. The Chest. 26. The Acute

Abdomen. 27. Abdominal Injuries. 28. General Condition of the Abdomen. 29. Hernia. 30. The Upper Bowel. 31. The Lower Bowel. 32. Liver, Pancreas and Spleen. 33. The Urinary System. 34. The Scrotum. 35. Gynaecology. Part V. Operative Surgery and Ward Procedure. 36. Admission, Examination and Pre-operative Preparation. 37. Anaesthesia and Analgesia. 38. Operative Surgery. 39. Post-operative Care and Ward Dressing Routine. Index and Glossary.

This book is written 'for the use of medical and hospital assistants in the tropics'. Your reviewer has no experience of this class of training and little contact with such auxiliaries, a term taken to mean not the technologist, masseur, physiotherapist, etc. as defined in this country, but the medical assistant who plays the role of doctor when the latter is not available. With the rapid developments of medicine in this country there is no place for such semi-educated practitioners; the skilled nurse is preferable to a half-trained doctor where medical aid is in short supply.

The book surveys in elementary fashion the field of modern

surgery. Addressed to a poorly educated group the total lack of pictures and diagrams is a striking omission. The style is friendly and conversational; this informality leads to a certain looseness of expression but, in general, the chapters are concisely presented.

There are some statements of fact which are very wide of the mark: 'Fortunately the African appears to be comparatively resistant to Tuberculosis;' and 'Keloids are excised and grafted,' without mention of deep therapy. Other statements, such as 'After intramedullary nailing of the femur weight can be taken almost immediately', and the description of nursing paraplegics in plaster shells, are unacceptable. No mention is made of underwater drainage in chest surgery.

The only disease of surgical interest in the pancreas is Carcinoma; the widespread surgical manifestations of worm infestation in non-whites are not mentioned. There is an inadequate description of the variety of diseases commonly seen affecting the male genitalia. The author feels strongly about hospitals spending time and money circumcising patients who attempt to avoid tribal initiation ceremonies. Perhaps the ravages of carcinoma of this organ are not so apparent as they are amongst Southern Africans. Ano-rectal diseases are a constant source of varied pathology in the African, yet the author states that haemorrhoids, fissures, and fistulae are uncommon, as the normal African's diet does not cause constipation.

Apart from these factual criticisms the book has a failing common to texts on surgery in non-whites in Africa. The standpoint of standard European pathology is taken and diseases discussed simply in relation to the rarity or frequency of such conditions, without accurate statements of incidence and little discussion on the epidemiology and the modifying factors of diet, social custom, and home conditions on the indications for and methods of treatment.

This book is a condensed and simplified review of surgery, with some useful information on modern treatment of common diseases. It is designed for an elementary audience, which would be better served by a sound nursing text book; as a surgical text for medical students it is incomplete.

A.E.K.

HEWER'S HISTOLOGY

Hewer's Textbook of Histology for Medical Students. Seventh Edition. Edited by C. L. Foster, M.Sc., Ph.D. Pp. viii + 438. 418 Figures. 27s. 6d. net. London: William Heinemann—Medical Books—Ltd. 1957.

Contents: I. The Cell. II. Tissues. Epithelial Tissue. III. Connective Tissues. Blood. Lymph. IV. Development of Blood Corpuscles and their Destruction. Marrow. V. Connective Tissues (continued). Connective Tissue Proper. VI. Connective Tissues (continued). Cartilage. VII. Connective Tissues (continued). Bone. VIII. Muscular Tissue. IX. Nervous Tissue. Nerve Cells. X. Nerve Fibres. Nerve Endings. XI. Nerves and Nerve Ganglia. XII. Neuroglia. XIII. General Structure of Organs. XIV. Blood Circulatory System. Arteries. Veins. XV. Capillaries. XVI. Heart. XVII. Lymphatic System. XVIII. Thymus. Spleen. XIX. Suprarenal Glands. XX. Thyroid. Parathyroid. XXI. Pineal. Pituitary. XXII. Skin. XXIII. Respiratory System. XIV. Digestive System. Mouth. XXV. Digestive System (continued). Oesophagus. Stomach. XXVI. Digestive System (continued). Small Intestine. Large Intestine. XXVII. Digestive System (continued). Liver. Gall Bladder. Pancreas. XXVIII. Kidney. Ureter. Bladder. Urethra. XXIX. Male Reproductive Organs. Testis. XXX. Male Reproductive Organs (continued). Ducts and Glands. XXXI. Female Reproductive Organs. Ovary. XXXII. Female Reproductive Organs (continued). Ducts Placenta. XXXIII. Mammary Gland. XXXIV. The Eye. XXXV. The Ear. XXXVI. Central Nervous System. XXXVII. Certain Abnormal Variations in Minute Structure. XXXVIII. Protective Mechanisms in the Body. Appendix. Histological Methods. Index.

This textbook, first published twenty years ago and now in its 7th edition, has long been popular with medical students. Low cost and brevity of text are strong attractions to the students.

The photomicrographs are excellent and there is a fine series of photographs of brain stem sections. Many of the line drawings are, however, difficult to identify without the relative captions.

A short text has much to commend it to the student who has acres of print to absorb but demands the utmost in clarity of explanation and description. In this respect 'Hewer' is open to criticism, especially with regard to complex organs such as the liver and spleen.

This book should be adequate for nurses and other medical auxiliaries in their study of physiological histology but it is probably not sufficient for the present day courses in histology for medical students unless well supplemented by lectures and laboratory teaching.

R.A.G.

CUNNINGHAM'S MANUAL OF PRACTICAL ANATOMY

Cunningham's Manual of Practical Anatomy. Twelfth Edition. Volume I. General Introduction, Upper Limb, Lower Limb. Revised by James Couper Brash, M.C., M.A., M.D., D.Sc., LL.D., F.R.C.S.Ed., F.R.S.E. Pp. xii + 394. 196 Figures. 25s. London: Oxford University Press. 1957.

Contents: General Introduction. Upper Limb. Introduction. Pectoral Region and Axilla. Dissection of the Back. Free Upper Limb. Shoulder (Scapular Region). Front of the Upper Arm. Cubital Fossa. Back of Upper Arm. Shoulder Joint. Forearm and Hand. Front and Medial Border of Forearm. Wrist and Palm. Back and Lateral Border of Forearm and Back of Hand. Deepest Structures in Palm and Forearm. Elbow Joint. Wrist Joint. Radio-Ulnar Joints. Joints of the Hand. Lower Limb. Introduction. Front of Thigh. Superficial Dissection. Deep Dissection. Gluteal Region. Popliteal Fossa. Back of Thigh. Medial Side of Thigh. Hip Joint. Trochanteric and Adductor Muscles and Profunda Femoris Artery. Leg and Foot. Front of Leg and Dorsum of Foot. Lateral Side of Leg. Medial Side of Leg. Back of Leg. Sole of the Foot. Knee Joint. Ankle Joint. Tibio-Fibular Joints. Joints of the Foot. Index.

A striking testimony to the popularity of this book and the esteem in which it is held, is the fact that it has been in existence for 78 years and that it is one of the most popular and widely used of dissecting manuals.

There are a few alterations in dissecting plan, the most obvious of which is the long overdue removal of the instructions for perineal dissection from the first volume. Some old illustrations and radiographs are replaced with new ones, including negative prints, of a high standard.

Professor Brash has had to face the recurrent problem of a changing nomenclature, this time by the 1955 Congress at Paris, and now called the Paris Nomenclature (P.N.). Where the name of a structure has altered, the alternate B.R. or P.N. name is given in brackets, principally in the index and partly in the text. It is to be hoped that agreement on this subject will soon be reached, for the unfortunate student entering his clinical years finds himself confronted with a host of alternative terms; old terminology, B.N.A., B.R. and now P.N. Professor Brash's approach will reduce confusion to a minimum until the final form of the P.N. is generally accepted.

The production remains of a high standard, with clear illustrations and print in a book of reasonable size. Your reviewer proved the truth of the claim that the binding is waterproof with water, tea and alcohol (commercial).

Written primarily for British Schools, it may be thought too detailed for South Africa, where the course of dissection is completed in 1 year. However, the book is recommended to those preparing for the higher examinations, by whom it will be found most useful.

P.G.L.

STUDIES ON SECRETION OF THE PANCREAS

Sekretionsstudien am Pankreas. Experimentelle und anatomische Pathologie. Von Priv.-Doz. Dr. V. Becker. VI + 120 Seiten. 54 zum Teil mehrfarbige Abbildungen in 77 Einzeldarstellungen. Kartoniert DM 29-50. (Zwanglose Abhandlungen aus dem Gebiet der normalen und pathologischen Anatomie, Herausgegeben von Prof. Dr. W. Bargmann und Prof. Dr. W. Doerr, Heft 1). Subskriptionspreis für Bezieher der gesamten Reihe DM 23-60. Stuttgart: Georg Thieme Verlag. 1957.

Inhaltsverzeichnis: Vorwort. Einleitung. I. Histophysiologie und-pathologie der Bauchspeicheldrüse. 1. Morphologische Kennzeichen der Sekretion. 2. Sekretionsreize. 3. Dyschylie. II. Pathologische Anatomie der sekretionsgestörten Bauchspeicheldrüse des Menschen. 1. Autolyse. 2. Untersuchungsgut. 3. Altersveränderungen. 4. Dyschylie. 5. Parachylie. Sekretion gegen Hindernisse. 6. Krankheitsbilder. Schluss. Literatur. Autorenregister. Sachregister.

The book is a histo-pathological study of the pancreas during different stages of disease. The endocrinology is discussed accordingly. The histo-pathology is described as observed in conditions of ethionin poisoning and other forms of chronic irritation. The influence of radio-active sulphur on the pancreas is discussed.

The histological changes which occur in the pancreas subsequent to other systemic diseases are described with special reference to radio-active sulphur as a means of determining cell activity, permeability and its influence on pancreozymin secretion.

The enzymes pancreozymin and secretin are discussed and their influence on the type and quantity of pancreas secretion is pointed out. A theory is formulated to explain why pancreozymin produces a viscid in contrast to the more aqueous secretion pro-

duced by secretin. The influence of nervous and humoral stimulation on the glandular filtrate is discussed in detail. The specific effect of alloxan on the pancreas is demonstrated by means of appropriate photography.

An explanation is sought for obstruction of the secreting gland of the pancreas neck cells and theories are advanced on a basis of probability and the practical importance in carcinomatosis and its sequelae.

The effect of vitamin-A deficiency is mentioned as a potent cause of cell metaplasia. The changes which occur in cases where secretion occurs against obstruction and the incidence of metaplasia in elderly patients are illustrated by convincing statistics.

A synopsis is furnished of the different types of pancreatitis. Its histology and causes are discussed on experimental and clinical basis.

J.H.D.

SYSTEMIC ARTERIAL EMBOLISM

Systemic Arterial Embolism. By John Martin Askey, M.D. Pp. x + 157. Illustrated. 85-75. New York and London: Grune & Stratton, Inc. 1957.

Contents: Preface. Introduction. Historical Review. Section 1. Heart Disease as a Cause of Arterial Embolism. Section 2. Death and Disability from Systemic

Arterial Embolism in Heart Disease. Section 3. Clinical Correlations of Cardiac Mural Thrombosis and Systemic Arterial Embolism. Section 4. Pathogenesis of Vascular Thrombosis. Section 5. Pathogenesis of Cardiac Mural Thrombosis. Section 6. Pathogenesis of Systemic Arterial Embolism in Heart Disease. Section 7. Differential Diagnosis of Rheumatic and Arteriosclerotic Heart Disease. Section 8. Prophylactic Antithrombotic Measures for Systemic Arterial Embolism. Section 9. Continuous Antithrombotic Drug Therapy in Heart Disease. Bibliography. Index.

This monograph deals with arterial embolism and is, therefore, concerned essentially with mitral valve disease and cardiac infarction. The incidence of embolism, the dangers of recurrence, the organs affected and the mortality rate are all statistically analysed, using data from the literature. The nature of the valve lesion is stressed, as embolism occurs more commonly in mitral stenosis than in mitral incompetence. The influence of auricular fibrillation on this condition receives due emphasis.

Emboli from cardiac mural thrombosis are far less important and the common cause is cardiac infarction. It is a pity that systemic embolism from myocardial failure of unknown origin, as it occurs in Africa, receives no mention or discussion.

The prophylaxis with anticoagulants is considered in the latter half of the book. The subject matter is naturally very restricted, but for those interested in this specialized aspect there is much of interest and the bibliography is full.

S.S.V.

CORRESPONDENCE : BRIEWERUBRIEK

PARENTERAL MAGNESIUM SULPHATE IN CORONARY DISEASE

To the Editor: I shall be grateful if you will allow me the courtesy of your columns for a few remarks about the use of parenteral magnesium sulphate for angina pectoris.

Three years ago at the age of 40, I developed a moderately severe angina of effort. Very soon, within a matter of weeks, a short flight of stairs became an agonizing ordeal. I was put onto intramuscular heparin (25,000 units daily) and a low-animal-fat, low-cholesterol diet. This gave me no relief whatever, except in the beginning, which coincided with 3 weeks away from the practice. Noteworthy, too, was the fact that the blood lipids and cholesterol remained unaltered (blood lipids 72-79 and cholesterol more or less 270).

After 6 months on this treatment I was getting worse and developed a status angina. Then I heard about Dr. Malkiel Shapiro's method of treatment with mag. sulph. At this stage I had given up all hope of cure or even relief, and so I grasped rather despairingly at this straw. There was no scientific basis for the method and I had no belief at all in its efficacy.

To my amazement I began to improve after the second injection (2 c.c. I.M.I. of 50% mag. sulph. every fifth day). Within a month or two I was almost entirely free of pain. I stopped using heparin only a year ago, and am now using only 0.75 c.c. of mag. sulph. every fifth day (with strict low-animal-fat diet and no cholesterol restriction).

I lead a normal life—climb, swim every morning, and run a busy practice. At times, after a harassing day in the practice, I still get decubitus angina at night. Swimming for more than a short while (about 10 minutes) in autumn or early spring also still causes angina).

I am deeply grateful to Dr. Shapiro for putting me onto this treatment. I have now used his method in about 15 cases of proved coronary insufficiency with pain (high blood fats, positive E.C.G. findings, etc.) with gratifying results. Two of these cases are over 70 years of age.

I hope these remarks will stimulate others to try out this method for this distressing condition. A plea is made, however, for its use in proved cases of coronary insufficiency only, as a valuable form of treatment may otherwise become discredited.

H. Feldman

Brakpan
17 March 1958

ISSUE OF POLIOMYELITIS VACCINE

To the Editor: We should be grateful if you would publish this letter for the information of your readers:

1. Poliomyelitis vaccine is now available for all age groups up to 40 years, and medical practitioners are invited to submit applications for the patients whom they wish to vaccinate irrespective of age.

A number of cards, corresponding to the number of individuals to be inoculated, are sent with each issue of vaccine. These cards should be filled in with the details asked for and kept for reference by the medical practitioner or medical officer of health concerned. If serious untoward reactions occur or the patient develops an illness which may be considered to be related to the vaccine, this card should be returned with the details of the case to the Director of Research, Poliomyelitis Research Foundation, P.O. Box 1038, Johannesburg.

2. It is recommended that poliomyelitis vaccine should be given subcutaneously, *not* intramuscularly, into the deltoid region of the left arm. However, the intradermal route may be used to vaccinate allergic individuals known to be hypersensitive to penicillin.

3. Poliomyelitis vaccine may be given simultaneously with other vaccines, such as diphtheria, but at present it is wished to distinguish clearly between reactions due to poliomyelitis vaccine and those due to other vaccines. Therefore there should be an interval of a fortnight or preferably a month between inoculations of poliomyelitis vaccine and these other vaccines. Combined vaccines including the poliomyelitis vaccine will probably soon be developed and this will considerably reduce the number of inoculations at present required to immunize a child.

4. Unless the incidence of poliomyelitis becomes excessive the vaccination campaign may be continued through the summer months. Should it be necessary to suspend the campaign a directive to this effect will be issued by the medical officer of health concerned or by the appropriate local authority, or by the Union Health Department.

5. It was hoped to issue the vaccine for the third inoculations to all those medical practitioners and local authorities who had already received the first and second inoculations, without any further application being necessary. However, it is clear that many children have already been given third inoculations, and the Poliomyelitis Research Foundation is no longer certain that it has the appropriate information for the issue of these doses. Accordingly, a circular has been sent to all medical practitioners requesting information about the amount of vaccine needed for these doses.

J. H. S. GEAR
Poliomyelitis Research Foundation
P.O. Box 2325
Johannesburg
21 March 1958

J. H. S. GEAR
Director of Research

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